NATURE MAGAZINE

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OCTOBER 1929 35¢ VOL. 14, NO. 4

ANNOUNCING

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THE Nature idea in Christmas cards has been so well accepted by readers of Nature Magazine that over 200,000 cards were purchased by them last year.

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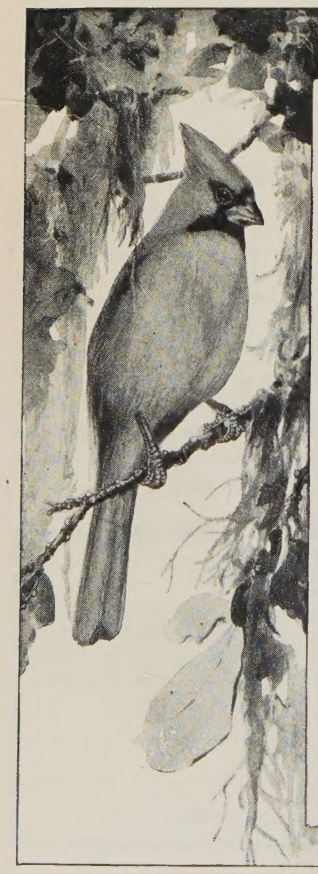

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Nature is in her most resplendent mood for those that travel in October. The year is dying, but like the day, it passes on in a blaze of color unequalled the rest of the period. Heat is gone; the air is bracing; the skies are free from the murky haze of summer. The trail and road are mostly free from the summer throng that no matter how delightful they are personally, cannot help but detract from the naturalness of things. Now is the time to be off and away.

* * *

The weather will probably be coolish at night, but the Gulf of St. Lawrence and surroundings has many features to compensate for that in the fall. The fjord-like bays of Newfoundland, the racing rip-tides of the Bay of Fundy, the turquoise blue of the great Saguenay River, the shore line of the St. Lawrence itself—these have a pictorial quality which, heightened by fall foliage, leaves nothing to be desired. Life will not be complete until the Lachine Rapids are shot, nor until the two quaintest cities in North America—Quebec and Montreal—are investigated. One of the many ways to reach this section of Canada is by the Clarke Steamship Co., Ltd., with offices at Montreal and Quebec. During the summer, attractive tours are arranged by this company, and with the exception of one or two, these continue far into October.

* * *

It's time to be thinking of fall and winter cruises South. Jamaica, the Bahamas, Cuba and other points become more and more alluring as winter creeps down from the north. The ways of reaching these picturesque islands are legion. There is the United Fruit Company's Great White Fleet concentrating particularly on Jamaica. For $200, one may spend 10 days on the sea and five on the island, with hotel accommodations and automobile sightseeing trips included in the fare. Other tours on this line take in Santiago, Cuba. The Furness-Bermuda line is another favorite for those Bermuda-bound. The Ward line hits Mexican ports regularly. The service on all three of these lines leaves nothing to be desired.

* * *

Europe, too, will be delightful in October, although perhaps not so many acquaintances will be found in front of St. Peters at Rome or along the Rue de la Paix in Paris. England, after a long drought and much heat, during the summer, has returned to normalcy. When making plans for the trip, count on using the new White Star liner, just added to the fleet. It is a 27,000 ton motor ship of 860 foot length, and named the Britannia. More than 1,500 passengers can comfortably voyage on her on her trips between New York and Liverpool. It is the biggest liner in service between these ports.

* * *

Much less expensive, however, is a jaunt around North America, and one that the travel editor has become an authority on, by reason of personal experience, leaves a permanent thrill. It includes Glacier Park, Portland, Oregon and Mt. Hood, Seattle.

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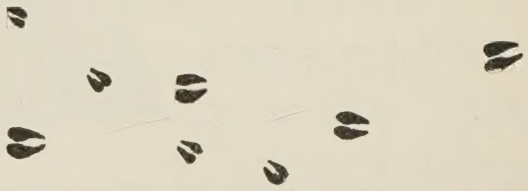

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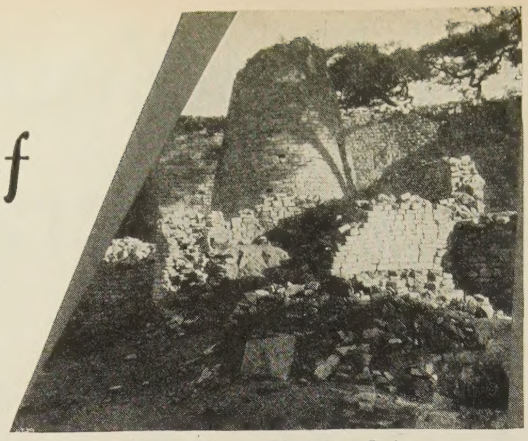

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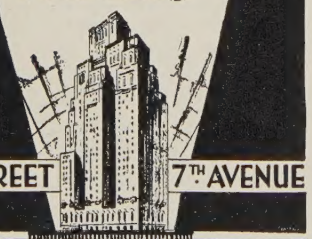

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For nineteen hundred years the world has sought a better understanding of the teachings of Jesus, which would enable men and women to have the more abundant life and happiness which He promised.

He said to some of His followers (Mark 11:24): "What things soever ye desire, when ye pray, believe that ye receive them, and ye shall have them." It is a promise that *anyone* may get *anything* he wants, by praying for it—that is, by praying for it in a *certain* way.

Again Jesus said to certain followers who were worrying about their physical and financial affairs (Luke 12:31): "But rather seek ye the kingdom of God; and all these things shall be added unto you." There can be no doubt about what this promise means—especially if we read the context beginning at verse 22. It clearly and simply means that if one can find the kingdom of God, his physical and financial problems will solve themselves—that there will be "added" unto him the things necessary to his happiness.

The tragedy of it is that these promises are not generally fulfilled in the lives and affairs of Christian people. Millions have diligently sought the Kingdom of God for years without finding it—without having anything much added to them. They have prayed earnestly for things and conditions they desired, without getting them. Millions of these good people, in the churches and out of them, are cramped and hampered by poverty, limitations, lack, sickness, worry and disappointment.

But there is nothing wrong with these promises of Jesus. The trouble is that men and women have failed to understand and use them correctly. They have thought the Kingdom of God is a place or condition outside of themselves, whereas Jesus said (Luke 17:21): "The Kingdom of God is within you." They have understood Him to say, in reference to praying for the things they want: "Believe that ye shall receive them," *and that is not what He said,* nor will such belief get what Jesus promised they should.

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NATURE CALENDAR

OCTOBER

by E. Laurence Palmer

OCTOBER—the month of gold and blue. Gold in the forests and in the fields, the rich gold of harvest time. Skies softened by a faint blue haze, from the heart of which at intervals float gently down to earth the honks of south-bound geese.

By day a symphony in gold and red and orange; by night, under the magic of the Harvest moon, the world becomes mystical, shrouded in a soft silver light. Where the rivers are, mists rise in strange wraith-like forms; where there are fields, the shocks of corn, symbols of Nature's lavishness, cut peaked, black shadows.

Nature seems to have declared a truce with struggle; all the wildlings, one might imagine from a casual glance, are living on the summer's profits, and are enjoying, with man, the colorful spectacle of the year's fruition,

This, however, is the busiest time of all, as you may prove to your own satisfaction by a walk across the bronze carpet of leaves on the forest floor. For many birds, the annual migration is on. The northern creatures are coming—ducks, geese, and swans. Hawks, too, are starting south. These last were perhaps the original refuel-in-air artists; watch them as they snap up here and there an unwary blackbird or perhaps a darting warbler, himself bound for a new land.

No greater sport exists than to lie on your back on some tall hill and watch the peopled airlanes.

The ground animals are just as busy, even though not travelling. In the north, the chipmunk "holes up". The summer has been a good one, and he goes down beneath his tree, "pulling in the hole after him." It takes sharp eyes to identify his resting place, but the reward for the discovery is ample. There's always a thrill that comes with digging out a Nature fact for oneself. The groundhog is about to start his annual sleep—it requires a lot to be a weather prophet, or even to hold up under the reputation of one, though you are not. Bears seek out dens. Everywhere is preparation for winter.

Perhaps, if one lives in the country, or near a park, he can trace through the month the most marvellous of all Fall phenomena, the color change in certain animals to fit the coming season. Deer will be changing from brown to gray, and varying hares slowly becoming white, making them less conspicuous to the swooping owl. Goldfinches lose their brilliant yellow, and grow sparrowlike.

About fifteen years ago this October, all the warring nations were trying to figure out ways of camouflaging their ships on the high seas. They finally took a page from the book of Nature, and used designs birds and animals had been using for centuries. Those with sketching proclivities and a yen for being abroad with the month might stimulate their imagination by trying to figure out just what kind of lines, dots and shadings birds have found most successful.

Now that the house fly has become lazy on the window pane, and is easily disposed of, compassion may suggest that the fly family generally be studied to find any good qualities it may have. After an investigation, many observers will differ with an authority who recently stated that manure was its only egg-laying environment; how many others are there? Such a bit of detective work will introduce the interesting gall flies that lay their eggs earlier in the year, but are now easily located by their unique galls, and turn up the long-legged crane flies that pick either mud, water, wood or the ground as proper places for their young. As for the syrphid fly, it has absolutely no scruples. Other flies, it will be found, dote on water, or flesh, or air and any and all kinds of plants. There is nothing undemocratic you know, about a fly.

October is the richest, most glowing month in the Nature calendar. It is to the year what the short beautiful adult stage is to the butterfly, —the blazing culmination of long continued effort. It is pregnant with death, but even so it is rich with the kernel of new life to come.

R. BRUCE HORSFALL

BLESSED BY SANCTUARY, THE ROYAL TERNS NOW WHEEL AND SCREAM AND NEST ON BRETON ISLAND REFUGE WITHOUT A MAN TO DO THEM HURT

NATURE MAGAZINE

Volume 14
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1929

THE PRESIDENT-NATURALIST
As Herbert K. Job's camera saw him on his visit to Breton Island in 1915

W. L. FINLEY

A CASPIAN TERN
One of thousands on the reservation

THE FRIGATE BIRD
Most beautiful of all in flight

TWENTY-FIVE YEARS *of* SANCTUARY

Breton Island Reservation Looks Back on Achievements

by Dr. T. Gilbert Pearson

President National Association of Audubon Societies

NORTHWARD from the eastern mouths of the Mississippi the shallow sea is dotted with numerous small islands, the inner ones clothed with marsh grass and occasional mangrove bushes, but the outer ones stark-naked and treeless, bearing only low sand dunes that shift their forms before the blast of every passing gale. Over a thousand mile area they are scattered, cheerless, forsaken brown patches in an ever-restless sea, useless to any of the arts or trades of man. And yet they provide nesting places for the greatest assemblage of sea birds existing along the eastern coast of North America.

JUST seventy-one years ago this month, Theodore Roosevelt, who meant so much to America's wild creatures, was born. And twenty-five years ago, on October 4, 1904, his pen created the Breton Island Bird Reservation, one of the thirty-eight wild-life sanctuaries he established. It is most fitting that during this month his memory be called up once more in connection with the quarter-century anniversary of one of his conservation works. These island reservations, colorful with the flashing forms of birds and re-echoing with their cries, will remain the true and significant memorials to him.

To approach any of these bare ocean-imprisoned clumps today is to stir up thousand of terns, skimmers, gulls and other sea birds that choose the roughest island for their breeding places, and to marvel at the beauty of the wheeling forms and the great abundance of their life. Yet not so many years ago, these

islands were bloody shambles, strewn with dead bodies of birds and resounding with the blow of clubs, the sound of guns and the terrified cries of death-marked creatures. For here were the haunts of eggers and agents for the millinery trade, the first plunderers of crude nests on the sand for the tern and gull market of the mainland, and the others, those who shot birds in multitudes as they came to feed their young—shot them for their wings to sew on women's hats in far off cities.

It was the President-Naturalist, Theodore Roosevelt, who first took official measures to stop the slaughter and started the move to bring back the decimated

the money-thirsty, who even turned their weapons on government agents to maintain their illicit trade, William Dutcher, the leader, encouraged by the President's action, began a search for other important breeding colonies of water-birds situated on government lands. Finley and Bohlman worked in Oregon and California, and the writer made the first survey of the Florida Gulf Coast. One of the agents

(Above)
THROUGH THE ISLAND'S THICK BUSH
Eagerly Roosevelt stalks and studies the birds, disregarding hardships
H. K. JOB

A CITY OF ROYAL TERNS
Thousands after thousands rise in graceful, swirling flight
H. K. JOB

(Below)
A COMMON TERN ON HER NEST
Continued sanctuary has made her unafraid

legions whose ranks had dwindled to a few thousand pairs. His first order established on a small island of mud in Indian River, Florida, a "Federal Bird Reservation", and made March 14, 1903 a red-letter day in conservation history. And one small section of the poacher's field received the sheltering protection of the Federal Government.

While the wardens were trying to guard this sanctuary from

FRANCIS HARPER

sent out was Frank M. Miller, who cruised among the islands between the Louisiana mainland and the Chandeleurs. He found a new menace threatening the lives of the fast-diminishing sea-birds —the eggs of laughing gulls, black skimmers, least, Cabot and royal terns were being gathered by the thousands for the use of glue manufacturers. One single vessel, he found, had taken seventy-two hundred in one day from Old Harbor Island, and at least fifty thousand eggs in all were gathered yearly.

He also discovered a plot of cold-storage men to employ hunters to kill wild ducks and geese the coming winter when they congregated in the sheltered

W. L. FINLEY

(Above)
ONCE HUNTED AND MURDERED
Eggers, glue manufacturers and milliners took heavy toll

THE FAMOUS PATROL BOAT
"A good hull but bad motor", said Teddy, from the stern

(Below)
ANOTHER BIRD RAISES YOUNG
A Forster's tern protecting her precious eggs on a western marsh

J. H. COQUILLE

waters of the outer islands. The birds were to be secured outside the jurisdiction of the State of Louisiana, and sent by boats to Mobile for shipment to distant markets.

The most majestic of the colonies of North America's sea fowl and migrating birds was to be stamped out just at the moment new generations of life were being born.

Mr. Miller's trip was in August. Frank Bond, on the Audubon Committee, at once presented to the Secretary of the Interior Mr. Miller's findings and his own report on the number of islands that were government owned. And on October 4, 1904, twenty-five years ago this month, another executive order came from the hands of the President: "It is hereby ordered that Breton Island . . . and Old Harbor and Freemason Islands . . . are hereby reserved and set apart as a preserve and breeding ground for native birds. This reservation to be known as Breton Island Reservation."

Supplementing government action, the Audubon Society leased some thirty other islands, useless for human activities, and as no government funds were available for guarding the Breton Island territory from commercially inspired raids, the Association undertook this responsibility.

The cold-storage men and glue-manufacturers changed their plans. Two wardens were employed to patrol the Audubon Reservation, and aided by a substantial schooner, continued the guardianship for fifteen years, until the Biological Survey was in position financially to take over the work. A few years later, the State Conservation Commission of Louisiana assumed entire oversight of the territory.

Protection was no task for men with

FINLEY & BOHLMAN

OUT FOR AN EARLY STROLL

The ex-President goes down to see what the laughing gulls, at the right, are making such a racket over

weak hearts in the early days of Breton Island Bird Reservation. The poachers were for most part desperate characters, who thought little more of human life than they did of the birds, and fought fiercely to retain their profit-bearing islands. As late as 1915, President Roosevelt, who visited the Reservation, wrote: "The illegal business of killing birds, of leaving nestlings to starve wholesale, and of general ruthless extermination more and more tends to attract men of the same moral category as those who sell whiskey to Indians. A fearless man and a good boat are needed to keep such gentry in awe." Captain William Sprinkle, born and bred on the Gulf Coast, was the man, and with his boat, the *Royal Tern,* he patrolled over five hundred square miles of sand bars, shallow waters and intricate channels. The boat, however, left much to be desired, and President Roosevelt joined his plea with that of the Audubon Society for something better: "The engines of the *Tern* are worthless; she can catch no freebooter; she is safe only in the mildest weather. Is there not some bird lover of means and imagination who will put a good engine in her?"

Better engines were built, and the freebooters diminished in number. Protection became a reality, eventually, instead of a name along the Louisiana coast.

It was more than ten years after President Roosevelt had paved the way for this protection by his official act that he gained time to inspect the results of his executive order. In June, 1915, in the company of Frank Miller, the original investigator, Herbert K. Job, "a naturalist," as Roosevelt said, "who has made of bird-photography a sport, a science and an art", and a few friends, the Nature-lover voyaged over a large part of the Reservation, taking notes, gathering impressions, and securing new object-lessons on conservation for future writings. Very forcefully was the accomplishment of government intervention brought home to him, for the westernmost island, beyond the national reservation, had been plundered earlier in the day of his visit—"the eggs had been completely cleared from most of the island, gulls and terns had been shot, and the survivors were in a frantic state of excitement." Human nature had not changed in the preceding ten years.

Like a boy on a holiday the former President scrambled with the others for turtles' eggs in the sand, and helped hunt out the nests of new species of the smaller birds—the red-winged black-birds, Louisiana seaside sparrows and long-billed marsh wrens, and tramped up and down the dunes to the raucous symphony of bird cries. A keen observer he proved to be, and his observations, appearing in the March, 1916, issue of *Scribners,* present a colorful picture of the rich bird life which these barren islands have taken to themselves. And though nowhere does he mention it, yet great must have been his inward satisfaction at seeing the myriad forms of life he had helped to preserve for untold generations of Americans.

WHERE THE GREATEST BIRD COLONIES BREED

Storms still sweep over the Gulf in summer and take frightful toll of young and old on low-lying islands; brown pelicans especially perish by the hundreds, their wings being broken by the force of the wind. Coons and mink have played havoc with nesting birds, but their numbers have been cut down by vigilant hunting. The birds wheel and circle and scream in comparative peace, today. The frigate birds ape the eagle over the dun-colored shoals, and rob the pelicans

of their catch of fish; the gulls smash the royal tern's eggs; the skimmer darts over the waters, ploughing the surface gently with its lower mandible in search of prey; and no man, unless an interested observer or a lone, cringing, surreptitious poacher, interferes with the scheme that Nature devises.

TREASURE ISLAND
This means a hearty feed

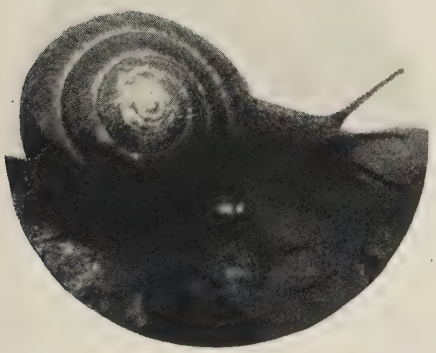
THE TURTLE LOSES
But palate is served

And above the daubs of storm-wrecked land surrounded by the blue of the Gulf, near the Louisiana shores, may the birds always remain as Roosevelt saw them—"the frigate birds soaring in circles above the storm . . . a file of pelicans winging their way homeward across the crimson afterglow of the sunset . . . myriads of terns flashing in the bright light of midday as they hover in a shifting maze above the beach . . ."

THE DOOR-CARRIER

He Leaves A Brilliant Trail

by Leslie L. Haskin



ON HIS WAY
A glistening line of secretion marks his passing

EXPLORING
This big handsome snail gazes on the world

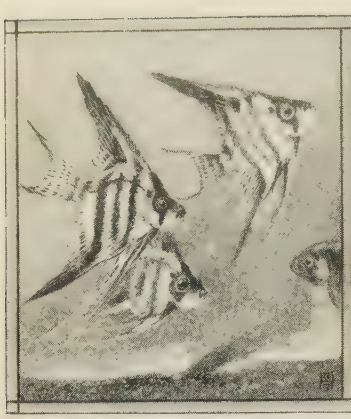
He is called "The Faithful Door-Carrier",—this big, handsome snail who inhabits the deep fir forests of the North Pacific slope, where vegetable waste is abundant and the soil is always shaded and moist. He is a traveller of note during the moist winter months, leaving behind him as a blazed trail a thin glistening line of secretion with which he lubricates his way. His life history is simple, quiet and unromantic, yet few have the patience to follow him, to find out just what he does.

Let us trail him. Here he has stopped to nibble at a tender, succulent leaf; at this point he ate the whole side from the cap of a slimy mushroom; there he devoured a bit of decaying offal; his taste is not at all delicate, and any soft or decaying vegetable matter is pleasing to his palate.

Not an exciting life. Here we find a tragedy,—some hungry bird has scattered the shell after devouring him. Perhaps here is romance, the eggs laid along the way prove that another has found a mate,—how, it is hard to understand, for both are atoms lost in a great world. How delicate and beautiful these single eggs are,—tiny shining pearls of the most perfect form, well worth seeking for their pure beauty and exquisite grace.

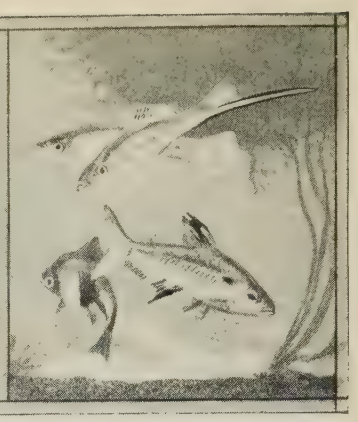
With the abating of the rains, the faithful snail, except in the very moist woods, becomes dormant. Far back into the curve of the shell the wily inhabitant retires, and across the entrance he builds one, sometimes two, three or even four, protecting doors, and there he dwells in safety through the drought, be it long or short. Snails have been known to exist, thus, in retirement and without food, for as many as six years, and then come forth to renewed life.

But before walling up for the summer, the snail does a strange thing. He directs his path toward the nearest large oak—one that reigned as lord of the woods, but now is venerable, or dead, or dying. Around the base of the tree he and his comrades congregate, and as the sunshine strengthens, one and all ascend the trunk. Never will they follow up a fir tree,—it must be an oak. Then clinging to the rough bark of the upper branches, or hiding in the deep moss, or among the fronds of licorice fern that often festoon them, the snails construct their protecting doors of fine thin parchment, composed of the same mucus matter that makes the trails, and so spend the dry summer in high safety, far above the trampling and exposure and drought along the forest floor. Here is peace and quiet; here is rest.



Adventures with Tropic Fish

by Eleanor B. Pack



One evening when my husband returned from New York he announced that he had a surprise for me. Escorting me out on the sun porch, he displayed a small aquarium alive with tiny multi-colored fish. I had often watched with interest the beautiful colors and darting movements of some tropical fish owned by a friend of mine, but I had supposed the task of keeping them to be far beyond my patience and ingenuity. Still, if my husband decided they would be easy to keep, it must be so. Men are ever more practical than women.

I gazed upon fish of every kind and color, ranging in size from a quarter of an inch to two or three inches, and in shape from slim graceful ones with sword-like tails to fat squatty ones. Slim iridescent fish striped with blue and black flashed past large fat ones decorated with black spots and possessing butterfly-like feelers. Other tiny ones varied in their designs of spots against backgrounds of pink and gold, while still others shimmered in sea-green splendor. They flashed in and out among the grasses, with a speed never dreamed of by ponderous goldfish. Theirs was a life of motion, of unending variety so unlike the monotonous stately existence of goldfish. Truly, the great nerve specialist who prescribed that his patients have a bowl of goldfish at hand to watch, as the effect of following the slow, graceful movements of the fish was restful and relaxing to the nerves, would never have included tropical fish in his medicinal category.

Without exception articles in past issues of Nature Magazine on aquaria and their tenants have brought comment and inquiry for more information. We are delighted to add to this group of articles with the accompanying helpful one, based on the experiences of Mrs. Arthur Newton Pack.

"How on earth did you ever think of bringing me these beauties?" I gasped. "I thought you didn't like fish."

"Well, these don't act like fish," replied my husband, rather surprised at his own reckless investment. "They are so lively that they act as if they had some intelligence, while no one would ever accuse a goldfish of such a thing. Besides, I have found out that these aren't any trouble to keep. The water has to be kept warm and more or less even of temperature, but I'll show you how we'll do it."

That was the beginning of our tropical fish craze. In a short length of time we had a large glass tank to replace our first tiny one. This we placed on top of a radiator in a position where it would not get too much sunlight. We learned to our dismay that too much direct sunlight produced green slime in the water and the balance between plant and animal life, which insures clear water, could not be maintained. The heat was regulated by either turning on or off the radiator or by slipping an asbestos pad between the radiator and the tank when it became too hot. We still had the problem of the early cold snap in the fall and the late one in the spring when the heat was turned off, but this was rectified by an electric light bulb placed against the glass to keep the water warm until the weather should automatically take care of the heat for us. Ordinary living room temperature is all right if kept reasonably even. Tropical fish need little air, and so a piece of glass placed over the top of the tank retarded evaporation and cooling.

As for changing the water, the answer was that there was no such thing. Now we learned that even goldfish do better when the water is changed very little; and that tropical fish die in fresh water. Fresh water carries in with it too much oxygen. To be "ripe" it must be left to stand at least twenty-four hours, and the plants will gradually collect the oxygen bubbles from the water and release them to the surface. If the aquarium becomes unbalanced, and the water muddy, or if the bottom becomes dark with sediment, it is easy to siphon out some of the water from the bottom of the tank and replace it little by little by fresh, as is done also to replace water lost through evaporation. Feeding is no trouble either, for the fish do better when fed about every other day. Dried daphnia and other prepared foods can be purchased; a little scraped raw meat is a treat once in a while; and tiny white worms or enchytrae can be raised with no trouble in damp earth, only needing to be fed occasionally on mashed potato or bread.

In our enthusiasm, of course, I added more and more fish until my aquarium, with its waving grasses and graceful plants, its stones and undulating sand bottom and myriad fish looked like a bit of some tropical ocean bottom. Fish from Africa, from South America and even from China flashed by, giving us a glimpse of a new and unreal world.

About this time I decided to try my hand at raising fish, for I had discovered that some of my fish bore their young alive and able to fend for themselves from the

beginning, while some had eggs and even built nests for them. My large tank was divided already into two sections by a glass partition to separate my quarrelsome Paradise Fish from the other peace-loving varieties, so it was more or less easy to divide it still further.

Learning that the Guppies were most prolific I determined to experiment with them, and finding one female possessed of a larger black opaque mass than the others, I placed her in "solitary". A few days later, when I came down one morning, I found ten tiny perfect fish swimming about as nonchalantly and as efficiently as their mother. Removing her to her original quarters, I fed the young ones on finely pulverized food and they soon waxed large and strong and, to my amazement, had young of their own before I had thought them mature enough to put with the other fish. This was a fascinating game. I thereupon tried other varieties, but often failed, due usually to some sudden change of temperature, and lost many by not removing them from their mothers before the appetite of said parent became so ravenous that she had devoured several of her offspring.

Who ever thought of teaching tricks to tropical fish! One day I discovered that the Paradise Fish, *Macropodus viridi-auratus*, did not need to be taught. Being cannibals, they had a section of the tank to themselves. From being fed only every second or third day, their appetites were voracious and they were always at the surface ready for their meal as soon as the glass top had been removed. I soon discovered that if I delayed in throwing the minute particles of dried daphnia on the surface, they jumped clear out of the water to reach my hand, and often even nipped the flesh of my finger in their greedy haste. Nor was this all. Fear of a human being never entered their fishy minds, and when I put my hand in their tank to clean the glass or replant some recalcitrant plant which had become uprooted, they nibbled at it to see if it might be edible.

MANY FASCINATING THINGS ARE CONSTANTLY TAKING PLACE IN THE AQUARIUM

The early morning sunshine danced in shafts of silvery brilliance in the water of the Paradise tank. One morning it caught upon tiny iridescent bubbles floating about on the surface, which certainly had not been there the previous night. The fish themselves showed unusual activity and I soon discovered the males, in heightened color, disporting themselves and waving extended fins before the more demure members of the species like conceited peacocks. I realized that at last I was to witness the courtship of my Chinese Paradise Fish. Carefully I separated one very active pair from the rest by removing them to a section of my tank separated from their usual quarters by a glass partition. Then I sat down to watch developments.

At first the pair made a careful inspection of their new surroundings. When they realized that they were alone, Mr. Fish leaped with joy. His three inches of length seemed to expand, his orange and blue vertical stripes stood out in contrast, each to each; and his plume-like fins and long tail, sweeping out in double streamers, changing alternately from sapphire blue to black in his excitement. Every now and then he would pause a moment to go to the surface, take a little air into his mouth, and then—as he started downward again—release a small film-coated bubble which drifted up to the surface of the water. As the bubbles increased on the water, he began to be a little more serious in his efforts at nest building and collected more and more bubbles into one place. By evening of that day a fairy palace of bubbles, about two inches in diameter, lay on the water, piled so thick that it rose about half an inch above the surface. Mr. Fish was still busily engaged in catching floating bubbles which had escaped

from the mass, returning directly beneath it, and releasing them to float upwards where they belonged. Meanwhile, Mrs. Fish took only a casual interest in the proceedings. More soberly colored than her mate, she drifted about, accepting the courtship gymnastics as a matter of course. She never let her mate know how much she admired him, except by sidelong glances as she retreated from his boisterous advances.

Excitement reigned when I arrived on the scene the next morning. Mr. Fish had his hands full and was frantic. Some time during the night Mrs. Fish had spawned; and he had carried each tiny egg to the surface and placed it in the nest, for there they were—masses of transparent globules mixed in with the bubbles. Mrs. Fish had decided that these eggs would make a good meal, and so tried to make sudden dashes toward the nest to seize a few when her mate was busy renewing bubbles or replacing some egg which had escaped from the mass. Adding to his other difficulties, Mr. Fish could see the other Paradise Fish who were peering so hungrily through the glass partition, that his confidence in the effectiveness of glass as a barrier began to wane. He darted to the partition, taking a side swipe at his wife on the way, and back to the nest to guard it, as quick as a flash of lightning. I felt sorry for the poor wife at first, for there soon appeared small gashes in her side, as her mate lunged at her; but I soon found that he was justified in his belligerent attitude, and I hastily procured a net and removed her to her former abode with other fish. Even then, Mr. Fish could have no peace, so I had to find an opaque shield to put in beside the glass partition so that he would not be so worried by the actions of his neighbors.

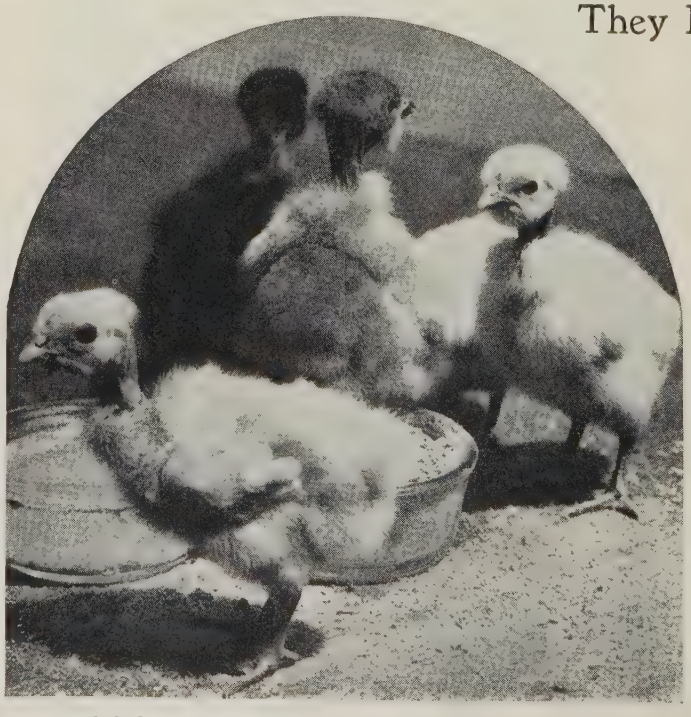
The idea that a fish could drown was a new one. I laughed derisively at first, as have many of my friends whom I have endeavored to enlighten since my own discovery. At the end of twenty-four hours I found the bubble mass spread out over the water, and myriads of tiny black specks wriggling on the top and even sinking down in the water. It was then that I found that fish can drown, for the father was busy grasping the tiny black dots which sank in the water and carrying them in his mouth back to the surface. The Paradise Fish is what is called an "air-breather" and has to have air every so often. The tiny fish are at first unable to swim about well by themselves, so the father has to rescue those which lose hold on the scattered bubbles and start to sink. I began to be worried lest the parent's appetite should return after his long fast, so I scattered regular food as well as baby fish food on the surface of the water, and was soon relieved to see the large fish grab a bite on the side every now and then. He was indeed a devoted parent. Two days later, however, I discovered that his devotion had taken a new form and that he was tiring of his job, occasionally swallowing a youngster instead of taking it to the surface; so I removed him and prayed that the young ones were old enough to fend for themselves. Many of them did drown, but they were now beginning to resemble tiny fish instead of shapeless dots; and so they remained for about two weeks, growing very little. At the end of this time they began to take regular food and grew apace, the larger ones devouring their more retarded brothers and sisters—the survival of the fittest.

This is just the beginning. Every time I return from town now, I am accompanied by a glass bottle which gurgles as I walk and makes many an idle loafer in the railroad station give me a curious or accusing glance as I pass. And in this glass jar I usually have some new and interesting iridescent fish to add to my growing collection. The lure of tropical fish has me in its grip, so why struggle and try to escape from it.

Bobbed Haired Chicks

They Follow Feminine Fashions Freely

by G. L. Oliver



THE BOBBED hair craze had spread to Mrs. Oliver's chicken yard, and the shingle was quite the thing among the younger set. Then perhaps the heat got at their heads, but four of the most flapperish of the flapping fowl, of the Turkoleon family, went berserk—and their father was a turk!—over some mash belonging to others. They were sentenced to be executed at once, but their lawyer noted a number of errors, and with one thing and another and with the laxity of the higher ups, —who, it is rumored, were just as guilty,— execution was stayed until Thanksgiving. The black one was a defiant wench. She tried strutting her stuff before the jury and went scot free.

"AT LAST SHE SITS! MY LADY SITS"
A great moment, when the rare limpkin comes to rest, and allows herself to be photographed

LAMPING the LIMPKIN

"Shooting" America's Most Romantic Bird

by Frances E. Dawson

(Compiled from the field note-books of the late W. Leon Dawson)

Photographs by W. Leon Dawson

A BIRD-BLIND in a swamp is probably one of the most uncomfortable places on earth. The one I am in is no exception. I am perched precariously upon a folding camp-stool, which, in turn, rests upon a submerged board. Of course, my feet and legs are in the water. The camera, which under these circumstances behaves in its awkwardest fashion, is set up and pointed in the right direction; while the cases rest upon two tiny floating logs. A myrtle bush is draped across the blind, and this bush has added very materially to my distress by blowing over. As the last straw, it is preparing to rain, after four days of threatening weather. It could hardly be worse—*but*, I am facing the wonder-bird of American romance, the limpkin, to wit! It seems too good to be true, but there it is as large as life, and oh, so natural! There are four hard-set eggs, which the mother bird is very anxious to cover before the rain; but she "has her doots", and her doots interfere with her dooty. Oh, dear Mrs. Limpkin, pretty Mrs. Limpkin, *please* come back now while we have a bit of sunshine. But, no, the bird will not sit to me—not yet. It is maddening, since the sun is shining more brightly now than it has before. So we'll just leave the blind for her to get acquainted with, and we'll see this biddy later.

In general appearance the limpkin is, of course, *sui generis*. He is a great, brown fowl, at once awkward and graceful, like the shag. But it was a surprise to me to find the limpkin such an active bird—above deck, as it were. And withal, he is a floppy bird. He rises from cover and drifts along hesitatingly, like a brown shirt blown off the wash-line and uncertain of the urge of

THE PRECIOUS NEST AND EGGS WHICH REQUIRE SUCH GUARDING

FISH CROWS ARE THEIR ENEMIES, AND ACCOUNT FOR MANY DEATHS

subsequent breezes. His feet and legs and bill dangle more or less helplessly, while the huge brown wings labor heavily at their unwonted task. If the bird decides to port, he invariably has a troublesome argument with his landing place. He flounders in a maze of twigs, or thrusts up a wing violently, to offset a determined effort on the part of the bush to unseat him. When he does come to rest, his great bill gives him an exaggerated solemnity, like that which would be imparted to a dowitcher by a long clay pipe.

He is apparently quite susceptible to curiosity, so he flaps ostentatiously upward, takes a turn or two at a height of ten or fifteen feet above the vegetation, and

NOT THE LEAST AFRAID OF MEN
After a while, one had to bang to get any attention

A MASTERPIECE IN COLORATION
Almost a duplicate of her surroundings is the limpkin

either picks out a commanding perch or drops back, grumbling, into the myrtle. Now and then two or three will rise at once, and then almost certainly they emit discordant cries—yokel comment, rather than fear, one gathers.

The limpkins make the marsh resound with a harsh *aounh*, something like the honking of a domestic goose, resonant and nasal. Another common sound may be represented as *kooão*, again harsh and resonant, but not so much so as the former cry.

Seen at the nest at close range, one must admire the finely-streaked plumage, coarsening posteriorly, which so facilitates inconspicuousness. A limpkin at rest in its chosen nesting haunt is a difficult object to see. The streakiness of the body plumage has exactly the appearance of light shining through tangled foliage; and the long brown legs and long bill are just so many sticks.

At last she sits! My lady sits! Every time she has been here, she has sat until I began making tiny snapping noises with the camera, or showed some sort of motion at the camera-hole. Then it was all off. But this time she came back. To be sure, the first time I snapped, on a two-second bulb, her head gyrated about twice; but the next two snaps were perfect, save for overtiming.

Next after returning to her eggs, the old hen spent considerable time dipping up bits of sodden leafage from the surface of the water, and depositing them, *dripping wet*, in different parts of the nest. She was manifestly providing moisture for the eggs, for presently she considered her task complete, and settled to the duties of incubation; and my best pictures of her show her standing over her eggs in the nest, or sitting placidly upon them. She is more tolerant, I find, of noise than of motion; for as surely as I thrust out an exploratory finger to clear the tent-webbing from the lens, she is off like a shot. After a few days, however, she became very tame, insomuch that I had to shout, and bang on the tent, to get any attention and the right kind of poses.

When she is off her eggs, she spends considerable time grumbling, *kowk*, or *kaouk*, staccato, and puddling about noisily, as though to distract attention, or to develop the nature and degree of mine. Or she perches on the top of a myrtle bush, or flaps about overhead, scolding, *clewp, clewp, clewp.*

The nests are to be found in the marsh, built upon a clump of saw-grass or myrtle or flag, from a few inches to two feet or thereabouts above the standing water. The composition is of twigs and dead leaves of myrtle or flag, and the lining is of the same materials. The nests are twelve or fourteen inches across, and the hollow two and a half or three inches deep, intended to hold from four to eight eggs.

I spent a happy evening hour with one of the young and the Pressman camera. We had found eggs hatching about an hour before, and I had hurried back to camp for a camera. When we first arrived there were three chicks still in the nest, and the mother was calling lustily hard by. When I returned, however, there was no one at home but the runt, and no sign of the others by sight or sound. I dare say the mother had gathered up such of her brood as were able to follow, and had left Tiny to his fate. Tiny wanted to be adopted forthwith, and he kept scrambling to my side of the nest so rapidly that I had great difficulty focussing upon him in the feeble light. He was too eager for my taste.

The young, not over a day out of the shell, have down which is *wavy* throughout, like that of a puffin baby. The coloration is dusky, save the bill, which lightens centrally and yellows toward the base, especially on the lower mandible. The feet are a little bluish, immense for the size of the bird; the bill about as long as the head, proportionately shorter than in the adult; and irides dark brownish. The bird swims and threads the weeds with equal facility.

The most striking feature of the episode with the runt limpkin was the solicitude of a neighboring pair of kites. These birds hovered very closely overhead—they could not have been more solicitous over their own offspring,—and their cries brought a gallant company of generous neighbors, insomuch that I had at one time no less than twelve everglade kites, "quality folks", all gyrating over my head, mildly expostulating.

HASN'T SCRATCHED YET!
The mother left Tiny to his fate, so he adopted the camera man

The association of limpkins and kites at nesting time is probably a close one, and is probably due to nothing more than similarity of food, and therefore of habitat. So far as known, neither eats a thing in the world except brown snails. Shell-piles found at water-level, upon little tussocks of vegetation, I should attribute to the limpkin rather than to the kite; and it is clear that the limpkin enjoys every advantage over its competitor in the securing of snails, because they are found, for the most part, beneath the water-line, and the limpkin has an effective pair of long forceps. In the matter of "shelling" the snails, however, one cannot help wondering how this bird accomplishes it. The operculum of the snail closes down very tight, and it would seem to require a very sharp-edged instrument, like the tiny hooked beak of the kite, to negotiate its excision.

Chief among the enemies of these marsh dwellers we found to be the fish crows, who were always on the alert to spy an uncovered nestful of eggs; and they seemed to take advantage of our success in finding nests, insomuch that it came to be an old story to return to a nest which had been left for photography only to find that these impudent reprobates had gobbled the eggs in our absence, leaving nothing but bits of shell.

And of course in these swamps there are always the deadly water moccasin; and as we tramped along, my companion shouted many a friendly warning of the danger; but I am not much afraid of snakes and paid little heed to the warnings. It is, however, a snake's nature to bite, to kill, and to devour; and I shall continue to kill all poisonous reptiles at sight, and help rid the world of their presence as rapidly as possible.

NATIONAL FLOWER POLL HITS HOME STRETCH

Wild Rose Continues To Lead

VOTES CAST TO DATE

Wild rose	*339,965*	*Phlox*	*29,252*	*Dogwood*	*9,691*
Columbine	*143,235*	*American Beauty Rose*		*Mountain Laurel*	*8,764*
Violet	*78,309*		*12,230*	*Scattering*	*18,330*
Goldenrod	*63,701*	*Daisy*	*10,665*	*TOTAL*	*714,142*

With the closing of the American Nature Association's National Flower Poll but three months away, the columbine, in second place, is making a valiant attempt to overtake the wild rose, whose lead of more than 100,000 votes was piled up early in the campaign. Other candidates, notably the goldenrod and the violet, are still in the contest, but even the most earnest of their supporters feel that they have a very slim chance of taking the national honors.

The schools, clubs and business organizations are again evincing an interest which slackened somewhat during the hot summer months, and it is expected that the total of 765,000 votes already turned in will be supplemented by at least 200,000 more before December 1. The states leading in number of votes, so far are as follows: Pennsylvania, Ohio, Wisconsin, Washington, New York. A number of others, among which are Delaware, Nevada, South Carolina, New Mexico, Kentucky, have lagged so far in listing the opinion of their citizenry, but it is expected that during the fall months, they will take their proper places in the poll.

The American Nature Association again extends an invitation to every person capable of forming an intelligent opinion, whether adult or child, to send his vote to the National Flower Editor.

THE GIANT HELLBENDER

Concerning the Rare Beauty of Perfect Ugliness

by A. B. Champlain

Illustration by R. Bruce Horsfall

WE APPRECIATE beauty in all things, but there are times when ugliness is interesting. Take the case of the giant salamander or hellbender. Nobody ever accused it of being beautiful but it certainly provokes thought. The very fact that it is the largest of our native salamanders is enough to make us want to pay it a little attention, though it is neglected by animal fanciers or epicures. Once you become accustomed to meeting salamanders you always want to know a little more about them—get the background, as it were.

Salamanders have the graceful shape and general appearance of true lizards, but they are quite different otherwise. Their bodies are naked, without the scales lizards have, and are more or less slimy. They are more nearly related to frogs.

The hellbender, who is burdened with a scientific name that is easy to forget (*Cryptobranchus alleganiensis* Daudin), attains a length of two feet or more. It has a broad, flat head and in general looks stupid and indifferent. A thick fold of skin along the side of the body helps to give it a "dish rag" appearance when in the water, and is an aid in its swimming accomplishments. It has four legs, with which it can walk about in a clumsy fashion, and a tail that is nearly as long as the body. The ensemble is greenish-black or slate color and matches nicely the river bottom and mud in which it lives.

HANDSOME IS AS HANDSOME DOES

Which phrase must reassure the giant salamander, for he does make good eating

The food of hellbenders consists chiefly of crayfish, worms, insects and other small aquatic creatures, of which they consume great amounts. Small fish have been found in their stomachs, but these are not generally a part of the hellbenders' regular diet because they cannot often catch prey so swift in movement. These curious salamanders are often caught with hook and line by persons using live bait, but their favorite dish consists of crayfish with which they may be fooled every time.

Hellbenders breed and lay their strings of eggs in the more shallow parts of streams. The egg masses are similar in general appearances to those of frogs. Each egg—about the size of a pea, and surrounded by an envelope of gelatine—is separated, one from the other, by a constricted neck of this gelatinous material. The whole thing, drawn out, forms a string quite like a string of beads, each about the size of a grape. The eggs hatch in the springtime into tadpoles resembling those of the frogs and they feed and grow up in a similar manner.

These salamanders are found in the waters tributary to the Ohio River, in the Susquehanna River in Pennsylvania, in western New York, and from the Great Lakes region to Iowa, and south in Georgia, North Carolina and Louisiana. At Harrisburg, Pennsylvania, the creature is quite abundant in the Susquehanna River and is commonly known and spoken of by local fishermen and rivermen as the "water dog". This name, however, belongs to another and smaller species of water-living salamander.

Most persons fear the hellbender, but it is quite harmless. And moreover, it is very good to eat. The flesh, which is firm and tender, corresponds very closely to that of the frog. After being dressed as is an eel, then coated with crumbs and fried in butter or lard, it makes a dainty dish that, epicures contend, is hard to excel.

BACK TO THEIR OLD HAUNTS
The Government has brought in these antelope to repopulate the prairie on which they used to roam in thousands

The Big Little Mountains

The Wichita—Oklahoma's Famous Forest and Preserve

by Will C. Barnes

In the southwestern corner of Oklahoma there rises out of the comparatively level plains an odd jumble of huge granite and limestone boulders, piled up in several instances into what down that way they call the Wichita Mountains. Geologists tell us it is one of the oldest geological formations in the United States. Measured by the Sierra Nevada they are mere mole-hills, but to the dwellers on Oklahoma's vast level prairies, Mount Scott, twenty-four hundred feet in elevation, the highest point in the state, is worthy of mention with Pike's Peak and the Rockies. Even more so, for while there be many other peaks in the Rockies equal in height and grandeur to that named for the gallant captain, Mount Scott is solitary and alone in its environment. There is but one such in Oklahoma.

Except for a few cottonwoods and such trees along the streams, ninety-five per cent of the timber is white oak of fairly good size and very attractive in its growth. On the rougher hills a few scattered junipers manage to exist. The oak is valuable chiefly for fence posts, rails and firewood. The junipers furnish the only local supply of Christmas trees and a large number of them are sold in the nearby towns during the holiday season.

The Wichita Mountains have been the center of much pioneer history back in the romantic days of the past.

Fort Sill on their southern edge has always been one of the important army posts in the Southwest and is today garrisoned by a large force of regular troops, mostly Field Artillery.

It was established in 1868 by General Sheridan and named after his West Point chum, General Sill.

Quanah Parker, the most widely known chief of the Comanche tribe, lived and died here. His house is still standing, a brilliant red roof with a huge blue and white star on both sides of it marking the red man's love of brilliant colors and fanciful design. Parker, born about 1845, was the son of the chief Nokoni, who took for his wife a white girl, Cynthia Ann Parker, captured in a raid on a settlement on the Texas frontier in 1835.

The mountains were named for a tribe of Indians called the Wichita, who preceded the Kiowas, Comanches and other plains Indians by many years. LaHarpe, the celebrated French explorer, reported the tribe as numbering about six thousand souls, when he visited them in 1719. They are nearly extinct today, having been gradually incorporated into the other tribes about them. They could not stand the white man's

THE GOOD OLD SWIMMING HOLE

At Boutelle. A picturesque scene near Oklahoma's only mountain range

civilization, especially his diseases. Smallpox took a frightful toll of them as it did of all the Western Indians. The Wichitas tattooed their faces heavily, causing the Kiowas and Comanches, according to Hodge, to call them by a name which in their language means "tattooed faces". This may possibly be the meaning of the name Wichita, but there is no positive proof of it.

The Wichitas were closely related to the Pawnees and Wacos and were designated as "Black Pawnees" by some of the plains tribes.

The whole country lying around the Wichita Mountains was once one of the greatest game regions of the West. Buffalo, elk, deer and antelope ranged over the plains by millions, while incredible numbers of wild turkeys lived in the oak forests. Army officers of those days tell stories that are hard to believe about the immense numbers of these birds. In my own lifetime, however, I have seen countless thousands of wild turkeys in the Mogollon Mountains of Arizona and New Mexico, where today but a handful remain. Civilized man is a ruthless exterminator of wild life wherever he goes.

In his story of the "Old Santa Fe Trail", Col. Henry Inman, U. S. Army, relates how in December, 1868, he and a small party of troopers were sent to a point in the Wichita Mountains to search for General Custer's command, then on a winter campaign against the Cheyenne Indians and thought to be lost. Lieutenant Inman was ordered to get on some high hills and keep fires burning day and night to guide the troops in. Inman started out with but a few days' rations, expecting to find Custer easily. During the two weeks they lay in camp "keeping the home fires burning" they lived entirely upon wild turkeys "of which there were immense numbers". It was winter and the buffalo were further south. "We longed for Nature's meat—the buffalo," Inman writes, "but there were none to be found in the vicinity. So we had to content ourselves with the birds, of which we became heartily tired."

When the so-called Indian territory was opened for settlement in 1901, Congress set aside some sixty thousand acres of this rough Wichita country as a National Forest. Later on, about 1905, Roosevelt, by executive order, created it as a National Game Preserve as being its best possible use.

Of the vast supply of game once found there, only a few white-tail deer were left, hidden away in the rough cañons and oak thickets. Buffalo were shipped in from the New York Zoological Park, elk from the Yellowstone Park, antelope from Alberta, Canada, and half a dozen wild turkeys came from the Ozark Mountains in Missouri. With these for a nucleus, the Forest Service set to work to re-establish these game animals and birds in their ancient haunts. Today there are nearly three

ECHOES OF A VANISHED HOST

The remnant of a mighty herd that used to thunder o'er the plains in countless numbers

hundred buffalo, twice as many elk and deer, and a huge flock of turkeys, about all the pastures will carry. The antelope alone don't seem to thrive in captivity and although new animals have been shipped in, the herd has been reduced to one or two animals at three different times. They seem to die from some unknown disease or intestinal trouble. Over two hundred buffalo have been culled from the herd and sold for meat or exhibition purposes.

One of the most unusual sights in the game-bird world is that of thousands of migratory ducks on their southern flight that make the Wichita a resting place for a few days each fall. Here they can be seen any day, waddling through the oaks by thousands, gobbling up the acorns amid a quacking that makes one think of the big "duck farms" on Long Island. As a game refuge, the Wichita has been a grand success. It is today nearly self-supporting from the sale of surplus game animals, the buffalo being especially profitable.

This mountain area is the spot to which all roads in Oklahoma lead, for it is an oasis in the desert, the veritable "shadow of a great rock in a weary land". The tourists from all over the open plains country flock to its shelter to rest, to cool off in its deep, shady cañons, to swim in the many artificial lakes formed by dams in the streams, and to watch the game animals.

There have been big days on the Wichita, since tourists found this great tract, and liked it; but the biggest of all was that day in the summer of 1925 when the city of Lawton, which considers the Wichita Forest as part and parcel of its civic possessions, invited the entire seven hundred and fifty members of the National Editorial Association, en route east from a trip to the Pacific Coast, to partake of a real barbecue, whereat a large buffalo was roasted whole. How ten bushels of potato salad were constructed by the wives of the forest rangers, how oceans of black coffee were made over open fires, how barrels of lemonade were decanted for the thirsty editors is history now, but the memory of the banquet will linger long in the minds of those who partook of it, and those who prepared it.

Before the hungry group sat down beside the long rough-hewn tables spread under the Oklahoma sky, a "Wild West show" was staged. With a thousand cars parked along the fence of the "feed lot", the Supervisor and his rangers, assisted by two or three hundred Indians in full regalia, rounded up and drove past the visitors the whole herd of buffalo, plus the hundred and more elk that usually grazed with them. The animals made noise enough, but the Indians also assisted mightily in the volume of sound. To them, chasing the buffalo was almost a sacred rite. They were living again in the old days before the white man came.

ON WICHITA LAKE

Wild ducks find refuge here, and continue to prosper

AMID THE SEA OF WEATHERED ROCKS

Where acres of granite boulders heap sky-ward in the heart of the Wichita "bad lands". In the insert is one of the handful of wild turkeys, descendants of great hordes once living in the oak forests

It was surely a "thundering herd"; and the Eastern typewriter-janglers received the thrill of their lives.

It is on this Wichita Forest, in a large, well-watered pasture next to that occupied by the buffalo, that the long-horned cattle purchased recently by the Government to save the breed from extinction have been placed. Here, it is expected, the picturesque breed which made history in the Southwest will thrive and multiply, giving the Wichita one more claim as the leading repository of priceless remnants of the colorful old "Wild West".

Meet Sir Ugliness

by Jessie Linkletter

If you call a desert wanderer a "desert rat", he will grin at you, but if you call him a "chuckwalla", the smile fades from his face; he will grow angry, and draw himself up in dignified resentment. For the chuckwalla is homeliness *ne plus ultra*.

His body is that of a toad, his neck stubby and wide, his head that of a lizard, and his slightly blunted tail and fat posterior give him the fat, complacent appearance of an alderman. His back is dull brown while his stomach is a rusty red, and a lighter band extends around his body just where the tail and body join. Scurrying into a crevice he is nearly hidden by protective coloring. He's quite fond of petting, too, and is slow to anger as he awkwardly glides over the rocks of the desert mountains or through the crannies of some warm, rocky gulch.

Though related to the Gila monster, he is not poisonous. Most of his food comes from the creosote bush. He clambers up in these bushes and feeds on the leaves, shoots and buds, always happily indolent and slow.

Though he adapts himself temperamentally to captivity, he does not live long there. Perhaps too much food without exercise kills him. He is considered a delicacy as an item of food by some Indian tribes.

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ONCE CALLED FAIRY-CAPS

From earliest days, they have been favorites

KINGS of the GARDEN PLOT

Foxgloves Have Earned Their Rank

by Clarence E. Baker

EMBLEMS OF GRACE

These are Digitalis lanata, *yet unsurpassed*

J. HORACE MCFARLAND CO.

THE DIGNIFIED foxglove is truly one of Nature's aristocrats. Towering above the more lowly flowers, it rules the whole garden during its too brief period of flowering. Few garden lovers can resist the beauty of the tall spires or towers of bells that rise to a height of four to six feet, claim the major share of attention for a short time, and then pass on before one has a chance to become accustomed to their beauty.

Foxgloves have long been a favorite in the old-fashioned garden. Dating back beyond the time of early European horticulture we find *Digitalis purpurea,* the species usually grown, as one of the commonest English wild flowers. It has been popular in America from early Colonial days and it is still found in the outstanding gardens of America and Europe.

The genus *Digitalis,*—taken from the Latin *digitalis,* meaning finger of a glove, which referred to the shape of the flowers, includes several species as well as several hybrids, usually biennials or perennials. The lower leaves are broad, wrinkled, thick and woolly, growing in clusters near the ground at the base of the plant during the first season. The second season a tall raceme or spike is sent up from this leafy plant which bears a profusion of bell-shaped flowers that surround the spike. These bloom from the lower part of the spike upward in dignified succession, the entire blooming period extending over two to three weeks during mid-summer. The flowers are white, cream, shell pink, lavender, deep rose and purple; many varieties are attractively dotted with crimson or chocolate along the inner portion of the lower side of the bloom. All of the color combinations are exceedingly harmonious and appropriate to many settings. Size variations may be secured, from the dwarf forms that grow scarcely two feet high to the tall growing forms that reach a height of more than six feet.

Digitalis is one of our medicinal plants and from its leaves valuable medicines used as sedatives, narcotics and diuretics are prepared. The leaves of the second year's growth generally are used for this purpose. The plant itself is considered poisonous. The homely name of "foxglove" is considered so inappropriate for so dainty and graceful a flower that much speculation concerning the origin of the name has occurred and many romantic stories have been written in this con-

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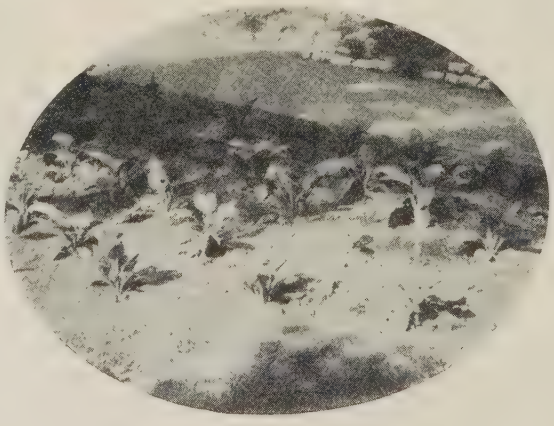
PLACE IN THE PERENNIAL GARDEN

At the right, the proper way for setting out seedlings is shown

nection. According to an old English legend, the fairy-folk wore the individual flowers as a headgear, while witches used them as thimbles. Early folklore in several languages describes the likeness of the flowers to thimbles and glove fingers. From these legends have arisen the synonyms, "Thimble-flower", "Fairy's Petticoat" and "Fairy-cap". Assuming the word "fox" to be a corruption of "folk", referring to "little folk" or fairies, these legends likely offer as good an explanation as any, inasmuch as the true explanation has long since been lost.

Nature has provided adequate facilities for the perpetuation of the foxglove family. The stamens and pistils of the individual flowers are so arranged upon the upper wall that the bumble-bee, as it crawls deep into the throat to collect the nectar, cannot fail to brush the pollen from anther to stigma and carry the pollen from flower to flower. Small insects are excluded from the flowers by a fringe of long hairs about the inner margin. Each individual flower is capable of producing a large quantity of seed and it is estimated that a single plant may produce nearly a million seeds. Under some conditions, if the flower spike is removed from the plant before the seeds are matured, another smaller flowering spike which will bloom the same season will be sent up.

Cultivated foxgloves are generally treated as biennials although under some conditions the plants may become short-lived perennials. Some species are true perennials but those most commonly grown are not. As the plant generally reseeds itself it may frequently be treated as a perennial by simply permitting some of the seedlings to remain in the portion of the bed occupied by the old plants that have produced seed and died. This is rather an unsatisfactory practice, however, and the better gardeners raise seedlings each year for blooming plants the following summer. In other words, seeds sown in the spring are permitted to form plants that grow the whole first season. These are then transplanted to their place in the garden or perennial border in the fall or the following spring where they flower in mid-summer and then die. Meanwhile, another lot of seedlings has been started the second spring to make plants that will flower the next year. It is not essential to start the seedlings in the spring of the year before flowering. They may be started in late summer or early fall. In localities where winter killing is severe the smaller plants following the midsummer planting of seeds frequently survive the winter in a more satisfactory manner. Where large plants are desired for maximum bloom, the spring sown seedlings are generally preferable.



(Below) TIME TO TRANSPLANT

By September, the well-grown plant looks like this, and is moved

The gardener who desires only a small number of plants and whose time is limited can secure well grown plants from his seedsman or nurseryman and save the trouble and uncertainty of raising them from seed. These plants, if set in his garden in the fall or spring, should bloom nicely the following summer.

The person who prefers to grow his plants from seed may plant the seeds either in the spring or late summer, preferably August, as suggested above, depending upon whether large or small plants are desired. A good soil should be used. A satisfactory mixture may be prepared from compost or decayed wood dirt mixed with an equal quantity of garden loam and a little sand. This mixture should be

sifted through a fine screen to remove lumps and foreign material. If only a small number of plants are desired a six-inch flower pot makes a desirable container as it may be sunk in the ground. This will aid in preventing the drying out of the soil.

Cover the tiny seeds lightly with peat moss, pulverized sphagnum moss or sand. If soil is used the seeds are likely to be covered too deeply. The seed bed must be carefully watered with a fine spray in order not to disturb the seeds. The soil may be covered with paper or burlap until the seeds begin to germinate and the whole watered thoroughly, but only as often as is necessary to prevent the soil from becoming dry. After germination the soil must be never permitted to dry out as this would prove fatal to the tender seedlings. It is well, also, to protect them from the direct rays of the sun during hot dry days.

When the seedlings have developed several true leaves they may be transplanted to a fertile garden soil. Set them from four to six inches apart. Here again they must be carefully watered and protected from the hot sun until they have become established.

A common practice is to plant the seeds early in April and transplant the seedlings to rows in a fertile soil about the middle of July, setting them about six inches apart. During late September these plants are again transplanted to the places where they are to bloom the following year. At this time the plants may be a foot across. Seedlings from the garden may be removed in July and treated in the above manner.

When setting in their permanent location give the plants plenty of room for development. The large growing forms require a distance of two to two and one-half feet apart for best results, the smaller growing plants may be set as close as eighteen inches. In any case the plants prefer a rich loamy soil of considerable depth and partial shade is much more satisfactory than full sunshine.

J. HORACE MCFARLAND CO.

EFFECTIVE FOR BORDERS

Here sweet william furnishes contrast. Below is a seedling ready for first transplanting

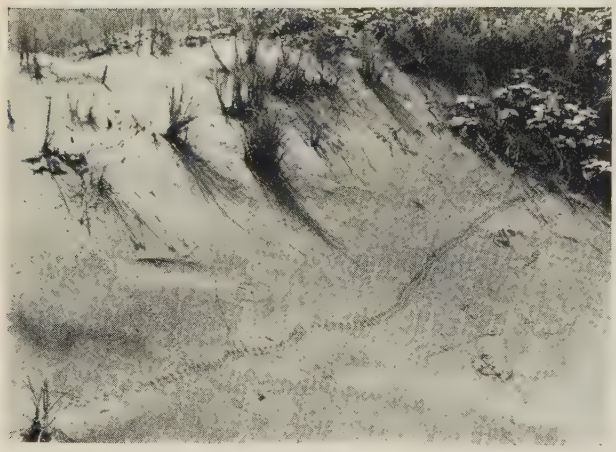
In most sections of the country some winter protection is necessary to prevent winter killing of the plants. A light covering of litter, shredded corn stalks or straw usually is satisfactory. A heavy mulch of leaves should be avoided as they pack too tightly over the plants and in any case the top of the plants should not be covered. A heavy coating of manure, likewise, must be avoided. Winter killing is one of the greatest difficulties encountered in raising foxgloves but if the above mentioned protection is given this trouble usually is avoided.

Foxgloves may be used in various ways in the garden to produce different effects. As the usual varieties grow tall they are best placed at the back of the planting with the lower growing flowers in the foreground. Used in this way they are very effective with sweet williams as a comparison flower. They may be planted in masses of like color along the edge of the shrubbery border or among

the shrubs themselves. They are also extremely effective when naturalized along the edge of woods or along brooks among other flowers or shrubs. Their height also gives the appearance of width to the narrow perennial border when they are properly used as a background at the widest places. The vertical lines of the flower spikes here afford an air of strength and support.

The place for foxgloves is in the perennial garden rather than for use as cut flowers. If they are grown in quantities sufficient for cutting, however, they make very suitable material for this purpose and may be used either alone or in mixed bouquets. They never appear at their best, however, when removed from the plant and they seem to feel their loss of position. Other flowers may take their place as cut flowers but there are few others that lend the same dignity and picturesque beauty to the perennial garden.

The ordinary varieties produce flower spikes three to four feet in length, while the dwarf varieties bear much smaller flowers. The greatest improvement in recent years has been the production of the Giant Shirley strains, the plants of which are of extraordinary size and vigor. The spikes grow five to seven feet tall and the flower heads sometimes are over four feet long, crowded with flowers. The color range in this strain is from white and shell pink to deepest rose with spots or dots of chocolate and crimson. These Shirley hybrids are the most likely to be perennial of any of the foxgloves commonly grown. The ordinary varieties may be secured in different color combinations throughout their color range. The smaller varieties have their place in the tiny garden where the large growing types would be out of place. The plants are sometimes used during their first growing season as herbaceous edgings along the border where their heavy wrinkled leaves furnish the grounds with a very pleasing effect of bushiness and symmetry.



RECORDS of NIGHT

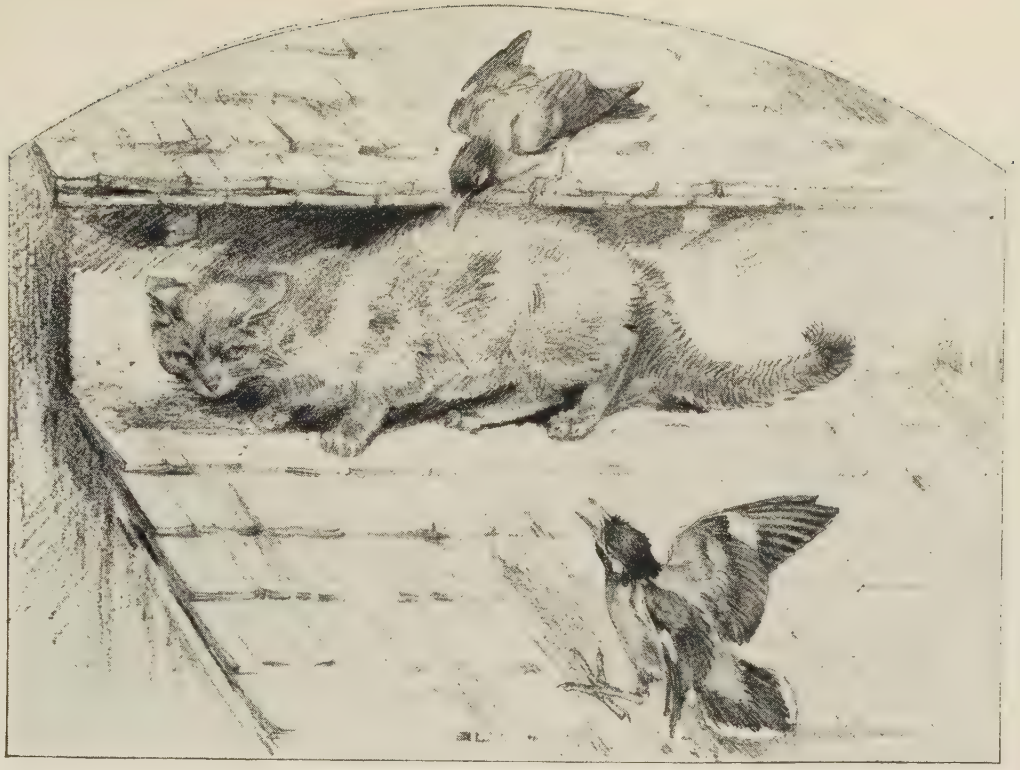
The Ramblers are Revealed

by Harold W. Clark

THE morning dawned bright and clear, and we rose exhilarated from our cots that lay under stretched canvas on the edges of the sand dunes at Clam Beach, in northern California. The sun cast crisp shadows of grass and sedge over the ripply surface of the dunes. As we wandered forth to admire the exquisite carving of the trade winds on the sand, a wealth of unknown night life stood revealed to our wondering eyes. In open spaces between hills a few rods apart the mice and other diminutive wanderers had made a perfect maze of miniature highways from one foraging ground to another. From under a verbena patch issued the tracks of a sand-crab, with a peculiar double line of foot-prints. Across them here and there were marks made by beetles and small crustaceans and other tiny creatures that only an expert naturalist could identify. Many times the steep slopes of sand at the lower edge of a verbena bed or a grass-plot would show where some little creature had struggled to prevent being carried away down the miniature land-slide which he had unwittingly started. Often the tracks of several kinds of animals would mingle in a regular confusion of traffic as some fallen heads of grass offered food for the hungry travelers. An almost unending variety of interesting narratives, comedies, and even tragedies stood carved before us as we tramped through the drifts of yielding sand from one hill to another and explored the records that the night had written on every side.

THE TRAILS OF LITTLE FOLK

Across the sand and back again while the world sleeps—sand crabs, small crustaceans, beetles, each following his own designs



"WHAT'S UP? CAT! LEMME AT HIM!"
The life of a feline is not so prosperous in mynah-filled Hawaii

MEET BATTLIN' MYNAH

Champ of Hawaii—and Singer to Boot

by Stephen Haweis

Illustrated by R. Bruce Horsfall

BEFORE I came, I supposed that the rolling surf rolled up upon an endless beach at Waikiki, upon which a series of elongated banana plants, growing an abundant crop of cocoanuts, shed violet shadows upon rows of hula girls who invited the "haole" to play the ukelele and decked him with "leis" of tuberose and jasmine free of all charge and responsibility. I gleaned my information from pamphlets, some of which contained some truth, and something more than the truth for good measure. Nobody told me about the mynah birds which screech in the hibiscus bushes and discuss their affairs in small groups almost beneath one's feet as one perambulates the verandaed streets. Four, five, six and more together: they are called "seven sisters" in India from their gregarious habit. They are brown with black heads and wing feathers and have the characteristic yellow skin flap of their tribe on either cheek. They are slightly smaller than the well known black variety, but they are quite as pert. When they fly they exhibit a splash of white undershirt on either wing which strikes a pleasant and surprising note. They alone go far to make Honolulu quite different from any other American town and are worth their salt many times over just for pure decoration.

The wreaths, the ukeleles and, I suppose, the hula girls can all be found by an earnest seeker, but only the mynah birds are free. And how free! They have the democratic idea highly developed, and the democratic idea consists in being just as good as anybody else, only much better. We humans never quite believe in it, however socialistic we may be, but the mynah birds have no doubts about it whatever. They strut the streets, they all talk at once, they know in whose house the lunch dishes are left on the table and exactly what every garbage can contains. They tell one another, with a wealth of sarcastic humor which most of us—not speaking the language—miss, all about it. Yes, they go everywhere. The only place one can be free of them is on a surf-board: they never bathe in the ocean.

It is not permitted to shoot within the city limits, so the birds are not often molested although their tameness inspires the murderous instinct of the poor sport wherever the nursery contains an airgun. They are good to eat and "they make such a row!"

It is true: they are not undesirable in a pie or upon an annointed skewer once they are dead and those who would

oppress an orphan or receive stolen goods enjoy these charming morsels once in a while, no doubt. Decent folk do not, and they grieve when the vandal slaughters them.

Just as the present generation has no idea of what a real hula dance was like, the delicate art being lost and smothered with vulgarity, so only the aged remember why the mynahs merit our thanks and respect. Only the aged can know how great a blessing their importation from southern Asia actually was. For the mynahs are not indigenous to the islands; they are the American foreign legion, an army of occupation against a serious enemy, and, they are one of Uncle Sam's most valuable fighting cohorts. In old times the army worms, which are not yet extinct, frequently chose some of the finest lands for their military manoeuvres. They marched down from the wooded hills in their millions and laid waste a strip of land until not a spear of grass nor a bulwark of bark stood against them. They killed the trees by stripping them of leaves, after which they rolled themselves in their military cocoons and rested until it became time for a new generation to take up the noble profession of arms against every green thing. The mynahs fought the army and succeeded where man had failed. They ate them till they were obliged to lean up against something to rest. Never since the Mynah Brigade was well established have those disgusting caterpillars been permitted to devastate Hawaiian earth and make it slimy with their countless dead: the stench of them is forgotten now, but it was once a plague in Honolulu.

As cage birds the mynahs are delightful pets since they often learn to talk; indeed, they learn to speak our language far better than we ever learn to speak theirs. It is not necessary to slit their tongues for this purpose. Birds talk with their throats and their tongues have nothing to do with it. It is a cruel and barbarous practice, based on the age-old foolishness which belongs with the story of the salamander's incombustibility and the jewel in the toad's head. There is only one bird whose tongue should be slit, and that is to prevent its talking, not to encourage it.

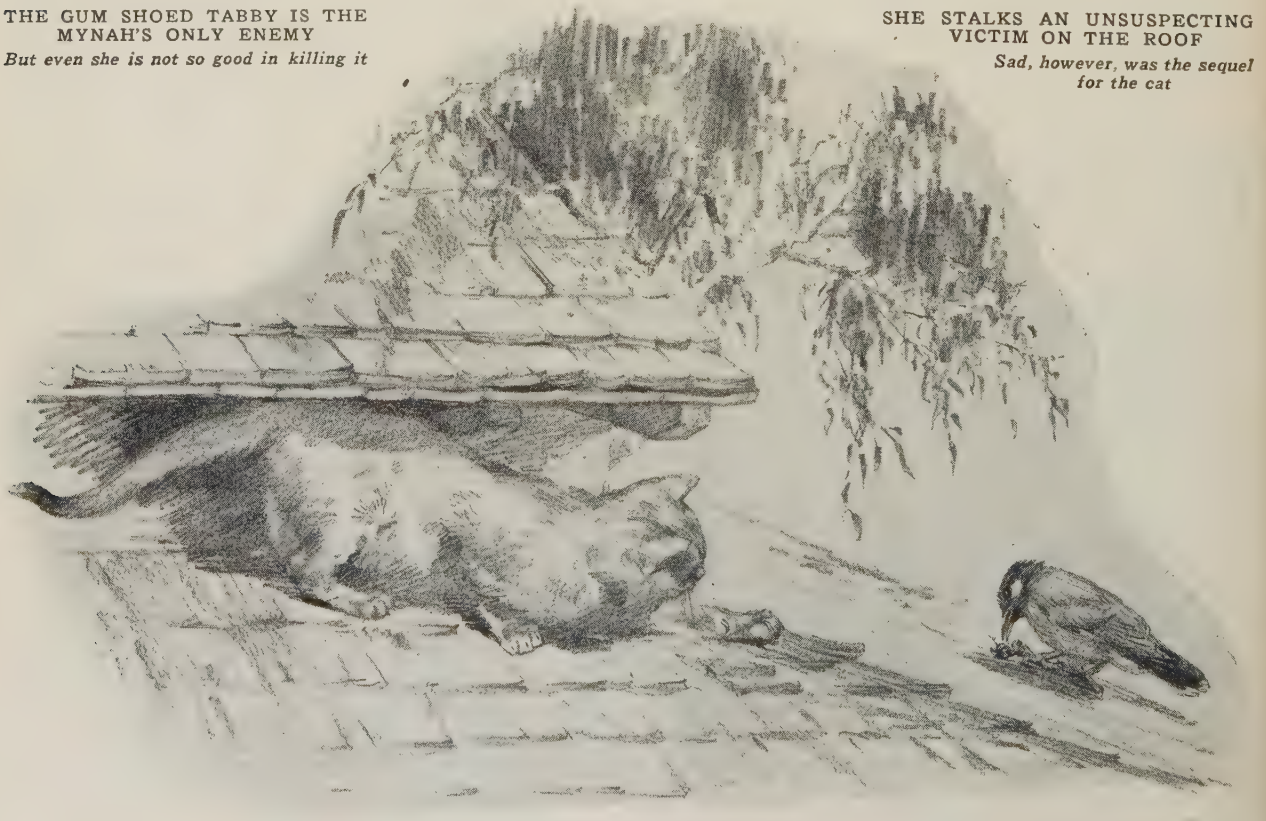
"Tell-tale Tit,
Your tongue shall be slit,
'n every dog in the town
Sh'll have a little bit!"

But even the dogs can get very little satisfaction out of that, for the Tell-tale Tit is the smallest of created things, and its soul cannot be seen by the naked eye at all.

All the mynahs are famous talking birds and they learn to pronounce real and difficult words, and do not merely make a noise which sounds rather like something to an indulgent owner. The Honolulu mynahs could tell strange stories of Diamond Head where, of an evening, motorcars of many makes foregather and blink as they gaze thoughtfully out to sea, hour after hour . . . but they are too much occupied with their own affairs. They are industrious, handsome and well-dressed; they are model citizens and have, or should have, no enemies. There are those who think they make too much noise and those who object to them because they have driven away the native Hawaiian song-birds to the unfrequented parts of the country. Perhaps they do talk too much and too loud, and perhaps the motors and trolleys ought to bear some of the blame, but I have observed that many people who become sentimental over the singing bird sometimes

THE GUM SHOED TABBY IS THE MYNAH'S ONLY ENEMY
But even she is not so good in killing it

SHE STALKS AN UNSUSPECTING VICTIM ON THE ROOF
Sad, however, was the sequel for the cat



can not distinguish the difference between a radiator and a canary. And once they know it is the radiator they order it to be fixed at once. They do it without shedding a tear.

The mynah birds have no real enemies except the gum-shoed tabby. I saw one stalking a mynah bird on the sloping shingle roof next door. It stayed under the shelter of the low eaves until the psychological moment to spring. The mynah was busy extracting the carburetor from a portly beetle and did not see or hear the cat until it found itself bowled over; but like a boxer the bird instinctively skipped sideways a fraction of a second before it was struck and was now up again without taking a count. It screamed for help before it went down again fighting for its life with all its claws. It kicked hard at the cat's eyes and pecked wildly, but help arrived in time,—by aeroplane.

"Wossall this . . . want help? My, I'll say you do! It's the cat the old missionary lady got for the mice, and that sleeps in her bed . . ."

"Low bred beast . . . dot her in the eye if you can!"

And the other bird drove his yellow beak into the cat's eye, as quick as a flash. That gave the first bird just time to get up and together they fought the enemy from above, below and every side. Pussy beat a swift retreat to beneath the roof where at least the attack could be from one side only and the two little birds drove it along with pecks and strong language all the way to the water-spout. Another mynah arrived on the scene.

"What's up? Cat! Lemme at him. Say, if this isn't a private scrap lemme give him just one bite!"

The battle was won almost before the new bird could get his coat off but he spat on his claws and went to it.

The birds beaten? Well, rather not. The cat slid down the rain-pipe yowling, across the kitchen roof and into the house as quickly as possible from whence issued a quavering voice:

"What did she want, darling, a little teeny weeny plate of cream, poor pussy then, poor pussy . . ."

Poor pussy was correct. Its eyes were already beginning to swell from the punishment. It rubbed them against the old lady's skirts without much satisfaction.

But on the roof I heard a different story.

"Thanks for the hand, you birds, I was . . ."

"Yes, I saw how it happened," replied the other bird hastily, "that's all right . . . where did you say you found that beetle?"

Frost Grapes that Are Not

The Moonseed Deceives the Eye

by Salome Comstock Miller

THE IMPOSTER

Or did the frost grape imitate this unsavory moonseed for reasons of its own?

ACROSS a jungle of blackberry bushes, grape vines, and nettles, the ripe frost grapes hung in great blue clusters on a vine twined around a tall shrub, gleaming like blue steel in the sunshine.

I made my way to them, and tasted one of the berries, thinking to make jelly of them. But something was decidedly wrong. No grape with such a flavor could possibly make good jelly. It was nauseating. And the seed instead of the usual several little pear-shaped seeds found in a grape there was a single large disk-shaped one with a saw edge and a deep notch on one side. The leaves also looked peculiar. They were smooth-edged instead of having the border of teeth which is characteristic of frost grape leaves. The stem was destitute of loose bark. There were no tendrils. Alas, it was not a grape,—it was a moonseed vine.

The external appearance of the berries is almost identical with that of frost grapes. At that, there is always a tiny scar which looks like a wormhole close to the stem on the moonseed berry, and this is not present on the grape unless the worm actually is there. The blue shade of the moonseed berry is slightly lighter and brighter than that of the grape, perhaps, but both usually have a whitish bloom over the blue, so this characteristic is hardly dependable for identification purposes.

How to discover any moonseed berries which might be with the grapes in the basket? A bit of study revealed a way. On the stem of the grape cluster, an inch or two back from the fruit, is a knot-like growth which appears to mark the true beginning of the fruit stem. At this point the stem is brittle. The grape stem is quite thick, while the stem of the moonseed berries is slender, tough, and without markings.

As this imposter has been known to make children sick, it is well to avoid it. Strange that lusciousness, tastiness and attractiveness should have the same form as its unpleasant prototype. —But it often happens.

MEMBERS OF THE FIRST GLACIER PARK PARTY

Standing, left to right,—Mrs. Richard W. Westwood, Washington, D. C.; Mr. E. B. Field, Hartford, Conn.; Miss Agnes Hoffman, Dickens, Iowa; Mrs. Flora S. Little, Bridgewater, Mass.; Mrs. Edna F. Townsend, Winthrop, Mass.; Miss Eleanor Field, Hartford, Conn.; Miss Esther Beard, Ripon, Cal.; Miss Frances Schneider, Meriden, Conn.; Miss Grace Smith, New York City; Miss Kate D. Huber, Indianapolis, Ind.; Front Row, left to right,—Miss Anna Koffinke, Meriden, Conn.; Miss Martha DuBois, Chicago, Ill.; Miss Lorraine Ebinger, Brooklyn, N. Y.; Miss Katherine Crisp, Buffalo, N. Y.; Mr. R. W. Westwood, Washington, D. C.; Miss Helen Pelton, Middletown, N. Y.; Miss Bertha Hoffman, Dickens, Iowa; Miss Helenita Topping, Brooklyn, N. Y.; Dr. Harold A. Bulger, St. Louis, Mo.

ON GLACIER'S TRAILS

Three Successful Nature Magazine Parties See Western Wonderland as Few Have Seen It

"WELL, where do we go next year?" This question, asked by members of the Nature Magazine Glacier Park parties, expresses perhaps better than anything else the remarkable success of this new activity of our Association. That the beauties of Glacier could not fail to grasp any who love the out-of-doors was, of course, assured. That twenty people so congenial, so enthusiastic, so game for everything and such "real folks", could be gathered together seemed inconceivable. But, as Art Staton, the genial, handsome and efficient horse guide obtained for all three parties, declared at the end of the first trip and repeated after the others, "There sho' wasn't a crab in the bunch." And there wasn't, because the inevitable stiffness that comes to tyro horsemen and women was just a transient thing. There was too much to see and do and absorb and remember to be bothered about such minor matters.

As many know, these trips were inspired by and evolved from the experiences of the magazine's camera-hunting expeditions into the Park under the leadership of our president, Mr. Arthur Newton Pack. Thus it was possible to map out a trip which would cover the best field of Nature interest, as well as scenic attraction, and still be within the physical capacity of the average outdoor lover. The National Park Service, welcoming such visitors, assigned Park Naturalist Ruhle

TO GLACIER WATERS

By EDNA F. TOWNSEND

If I could choose my pathway out of life
'Twould be from some high hour with beauty rife,
Through some deep lake whose quiet water lies
Rimmed by the mountains under summer skies,
Its emerald edged with sapphire in the sun
Changing and shifting as the ripples run;
Or, by a swirling pool of beryl green,
Foamy with bubbles in a rainbow sheen
Flung from the spray where glacial waters fall
Between the singing pine trees straight and tall.

While Mrs. Walter S. Little captured the beauties of Glacier Park in paint, her sister, Mrs. Townsend,—both members of the first party,—captured it in this poem dedicated to the lovely waters of the Park.

and Ranger-Naturalists Harbaugh and Peterson to the parties, and it is useless here to try to express the words of praise and appreciation voiced by all of the Nature Magazine groups.

The members of the pioneer party are pictured in these pages and were accompanied by Richard W. Westwood, Chief of Editorial Staff, and Mrs. Westwood. The names in the caption are all dignified, but actually if one were to see members of the party meet one would hear, "Hello, Petey Crisp," and "How are you, Bunny Ebinger?" At the right of the picture "Doc" Bulger is kneeling, perhaps because he toted his Graflex everywhere for eight whole days and then when he met a mountain goat within fifteen feet had used up all his films. "Katy" Huber smiles because she has changed the whole nomenclature of western saddles and according to her the pommel is now a "nozzle". "Podge" Field is hoping her sunburned nose won't show in the picture, while her Dad is teetering on an ankle that played him false. (Nothing short of a broken neck would have stopped Dad Field, however, and maybe not that.) Frances and Anna from Meriden are really the corner-stones of the whole structure,—they were the first two to reserve places in the Nature tours. Grace Smith and Helen Pelton were the Golddust twins, —even with a knapsack as sole luggage they looked as neat as the proverbial pins. The Hoffman girls and Esther Beard were hoping for more mountains to conquer, while our two creative artists, Mrs. Little and Mrs. Townsend, have the satisfaction of carrying home tangible souvenirs. Martha Dubois is still sad because she didn't get that deer picture, and "Topknot" Topping is on the verge of tears because the trip is nearly over.

ART STATON—HORSE GUIDE EXTRAORDINARY

Genial and ever vigilant, he took the parties safely over the spectacular trails

These little personal glimpses cannot convey the affection each member of the party had for the other at the end of the trip. Nor can it express the congeniality that was again reproduced in the membership of the second party. This group was escorted by Miss Elizabeth (Betty) Ridsdale, daughter of our managing editor and a

AT THE END OF THE FIRST DAY'S TRAIL

There the parties found Granite Park Chalet in the embrace of wondrous mountains, seemingly far from civilization

member of the first camera-hunt in 1925. The following were members of the second party:

Mr. and Mrs. Walter Wuerdeman of Cincinnati; Mr. and Mrs. Edgar Kincaid, and Edgar Kincaid, Jr., of Sabinal, Texas; Miss Catherine Breuer of Lakewood, Ohio; Miss Mary Bryan of New York; Mrs. Gilkey and Miss Pauline Gilkey of New Castle, Pa.; Miss Lutie Lee Hale of Middletown, Ohio; Miss Ethel Sue Horton of Minneapolis; Miss Josephine Lippa of Cleveland; Miss Eleanor MacGilliard of Cincinnati; Miss Patricia Ridsdale of Washington; Miss Lotta Sloan of Chicago; Miss Lavilla Perry and Miss Bessie Smith of Salem, Oregon; Mr. Henry Kerr of Fresno, Calif.

The responsibility of the third party was given to Mr. Paul Hannah, assistant editor of Nature Magazine. This group was composed of people active in the field of Nature Education and the members of the party were:

Miss Marie Strasser, Joliet, Ill.; Miss Ann Love, Joliet, Ill.; Miss Mary Young, Columbus, Ohio; Miss Dena Lindley, Madison, Wis.; Miss Edith Lathrop, Washington, D. C.; Miss Myra Hunter, Brooklyn, N. Y.; Miss Adele Masson, San Jose, Calif.; Miss Josephine Brabant, Madison, Wis.; Miss Susie Groves, Madison, Wis.; Miss Helen Dolman, Ypsilanti, Mich.; Miss Olga Lakela, Minot, N. D.; Miss Kathryn Peabody, Princeton, N. J.

THE SCENE OF A FEW OF THE THRILLS
The iron ladder which leads over the top to Sperry Glacier and Gunsight Mountain

These trips demonstrated several things. They brought out that they are not really tours but rather family parties of kindred souls. They established the necessity of limiting the groups to not more than twenty, a policy which will be adhered to. They confirmed our feeling that a non-commercial trip, escorted by a representative of the Washington office and accompanied by a popularly minded naturalist must be successful. And, finally, they made it virtually mandatory of Nature Magazine to repeat and extend such activities. This mandate will undoubtedly be obeyed and early announcement will be made about these most unique and worthwhile Nature adventures.

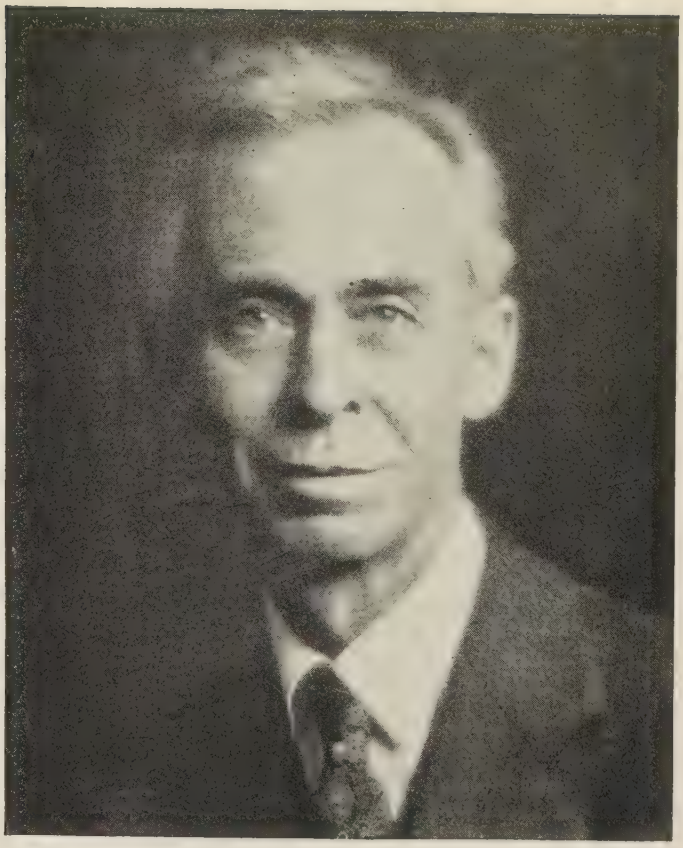
All three of the Nature Magazine parties covered the same route, hitting the mountain trail from Many Glacier Hotel the morning after the arrival in the Park. This route led over the Swiftcurrent Trail, which winds its serpentine way up the mountainside and ends twelve miles away at Granite Park Chalet. From here Swiftcurrent Mountain and the Garden Wall were climbed, and after two nights and a day at Granite, the parties pushed on over the Logan Pass Trail, filled with many thrills and gorgeous views, to Going-to-the-Sun Chalet. There lay lovely St. Mary's Lake rimmed by noble mountains, and from there short walks were made along the lake shore, rich in flowers. Two nights and a day at Sun and the horses were ready early for a spectacular ride over Gunsight Pass to Sperry Chalet, where Mrs. Engstrom made everyone feel that they were her house guests dropped in for a weekend. And such food! A day was spent in climbing to Sperry Glacier and travelling across its surface, tied together and secured to the sturdy person of Hildor Strand, the glacier guide. Nights about a campfire with all the old songs ringing clear, and finally a short trail down to Lewis' Glacier Hotel, where a number of members of the parties, loath to leave Glacier Park, elected to extend their vacations.

This matter-of-fact recital of the trip cannot convey even an inkling of what it really was. As several members of the parties said in despair, "What's the use, there aren't words to describe it." True it is that one loves Glacier Park as one loves a personality, and when it is seen as the members of the Nature Magazine parties saw it, it becomes a friend whose memory never dies. One yearns to return. Already several members of this year's parties have asked what can be done next year and whether sometime a group can be assembled to go by pack train into some of the back country and camp. It is apparent that an inevitable development of the Nature Magazine trips will be to work out some such special trips. The character of the present trips and of the members of the parties both lend to the creation of a fraternity feeling and guarantees a successful adventure. Early in the next year announcement will be made of plans for the 1930 Nature Magazine parties to Glacier Park and to other worth while places.

VERNON BAILEY

A Nature Nobleman

by Alma Chesnut



Among the present group of contributors to the Nature knowledge of the world, none is better loved and more widely respected than "Gopher Jim" Bailey, Chief Field Naturalist of the Biological Survey, and member of the Scientific Consulting Board of Nature Magazine. The complete story of what he has done for Science and indirectly for humanity can not yet be written, but even an early evaluation will reveal a record of achievement that few men, past or present, have excelled. We take pleasure in offering this short biography.

IN 1870, when Vernon Bailey was six years old, his father, Hiram Bailey, loaded the family wares into two covered wagons and moved out from the farm lands of Southern Michigan into the great woods of Minnesota. There he began the strenuous task of hewing a farm out of the wilderness. When the fields had at last been cleared and sowed the little boy was given the job of catching gophers guilty of destroying crops.

As he trudged along the furrows, setting his home-made traps, and learning the ways of the little animals without half trying, he did not think that one day he would be able to distinguish one hundred and twenty-five species of pocket gophers, and that he would be famous wherever scientists gather as chief field naturalist of the Biological Survey.

Today Mr. Bailey can look back upon forty-two years of service to the Government, during which he has worked in every state of the Union, in Canada and in Mexico, making his collections of specimens and gathering information about plant and animal life in the various regions. Probably no one in North America knows more about its native mammals than he, for, though his professional services were at first directed toward *Geomys* and *Thomomys* of the gopher family, he did not confine his studies to them. As he became famous for his work with other animals he won various nicknames, indicative of his pursuits. Theodore Roosevelt called him "Wolf" Bailey because of his efforts to protect farmers and cattlemen of the West against the thief of the herds. "Gopher Jim" Bailey was applied to him after his first bulletin on pocket gophers. "Beaver" Bailey was earned during research into the private life of the builder of dams, with a view toward protecting him from extermination and proving that he could be raised profitably on farms.

A NICKNAME-SAKE
Vernon Bailey became "Gopher Jim" after his valuable studies of this animal

Roosevelt and Mr. Bailey had become acquainted when the former was Civil Service Commissioner, and after the Colonel had become President his son, young Ted, became Mr. Bailey's disciple in woodlore, the two making bicycle trips outside of Washington, the naturalist teaching the boy how to trap wild animals and how to skin and prepare them for specimens.

All of his life Vernon Bailey has been surmounting, in his quiet, matter-of-fact way, obstacles which would have daunted a person of less stamina. He grew up in the wilderness of the frontier, beginning his education in a log school-house, and without access to any library. By his early 'teens he was skilled in woodlore, but had few books from which to learn the scientific names and characters of the animals he knew in the woods. Eager for this information, in 1884 he wrote to Dr. C. Hart Merriam, whose reputa-

ANOTHER FAVORITE SUBJECT
And perhaps a model, for "Beaver Jim" equals his flat-tailed friends in industry

tion as a student of mammals had reached him, asking if he would tell him the names of different animals if well prepared specimens were sent him. Dr. Merriam had just published his book, *Mammals of the Adirondacks*, and, planning wider fields, was engaged in assembling a fine private collection of specimens from all over North America. He answered the boy's letter cordially, not only offering to identify the animals, but to buy a series of specimens of the different species found in Minnesota. The prices which he offered seemed fabulous to the farm boy, living in his log house on the frontier. He was to net twenty-five cents apiece for mice and a dollar for woodchucks and skunks. Confronted with the prospect of simultaneously winning knowledge and wealth, he soon had a box ready for shipment. It was eagerly received.

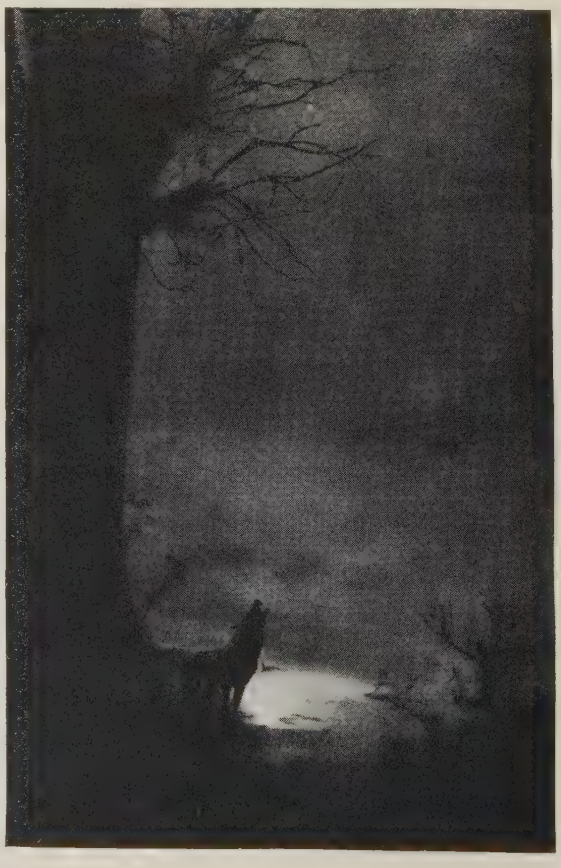
Dr. Merriam supplied the names, and much other information, instructing the boy through letters in the best methods of preparing skin specimens and skeletons for museum specimens. Three years later the Division of Economic Ornithology and Mammalogy, predecessor of the present Biological Survey, was organized, and Dr. Merriam placed in charge. One of his first acts was to appoint his pupil field agent at the munificent salary of forty dollars a month. Thus it was that Mr. Bailey, in 1887, set forth upon the very day after his appointment to tackle his first assignment—an all summer's jaunt through western Minnesota, Dakota Territory, Montana and Nebraska to study the bird and animal life of this newly settled region, ascertaining what species were harmful and what beneficial to agriculture. Every summer since has found him in the field, and today it is a rare bird, animal, or plant that he cannot identify and give its scientific name.

One of the most striking, and, at the same time, most interesting of Mr. Bailey's many assignments was a field trip into the Death Valley country. He was one of the group of scientists whom Dr. Merriam sent into the Valley in 1891 for a five months' study of the plants and animals that managed to exist there.

Mr Bailey remembers how he used to empty his traps before sunrise because if left an hour later the animals would be found cooked to a turn. In this foresaken furnace, which had claimed the lives of numerous adventurers who had sought to probe its secrets, the scientists found many new species of small animals that ventured abroad only at night, and even new fish where tiny streams had survived the sun. New insects and shells and many plants also new to science were collected.

During his sojourn in the land of death Mr. Bailey, upon one occasion, was faced with the necessity of making a three-day journey on foot across the valley, leading a worn-out horse. When he had trekked one-half the painful distance he found himself without water; his canteen had leaked, and the next waterhole lay in the Panamint Valley, forty miles away. To reach it he had to cross a mountain range nine thousand feet high, starting from Death Valley, 275 feet below sea-level. At the end of the first day he had reached the summit, where he camped for the night. On the following morning he resumed his march, reaching the water at noon. Mr. Bailey minimizes the feat in his customary modest way. "I was uncomfortable," he concedes, "but I wasn't worried, for all the time I knew just where the water was, and I chewed grass to keep my mouth moist as long as possible, but my tongue was so swollen that I couldn't eat. My horse was as thirsty as I was. When we reached the waterhole we both drank for an hour very slowly."

During the next few years the naturalist found time to take courses at the University of Michigan and at



NO SWEETER MELODY THAN THIS, WHEN A TIMBER WOLF BAYS THE MOON

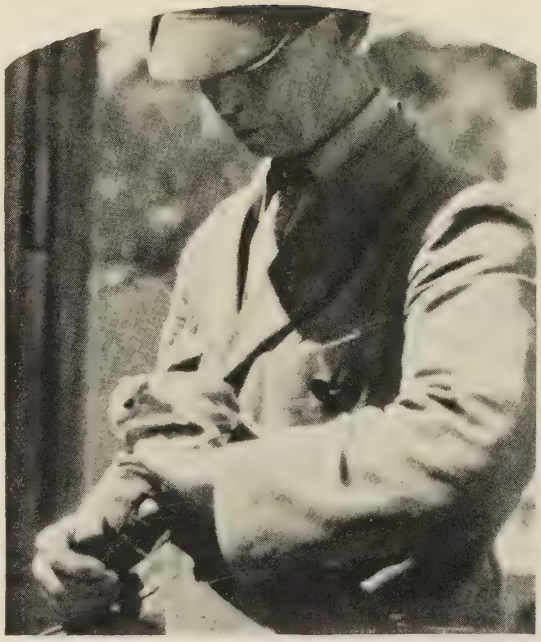
Columbian University, now George Washington, part of the time, continuing his work as field naturalist, and later as chief field naturalist of the Biological Survey.

Romance, too, had entered his life. Florence Augusta Merriam, the younger sister of the scientist who had assisted to mold his career, had promised to become his bride. They were married in December, 1899, and spent the following spring and summer in the field. This marriage was the beginning of a collaboration that has become more fruitful each year. Mrs. Bailey is well known for her books on birds, and has shared her husband's adventures afield, working with him in Texas, New Mexico, Arizona, California, Oregon, Montana, North Dakota, Minnesota, and Michigan, always entirely at her own expense. During the surveys Mrs. Bailey has kept the bird notes and written the bird reports, her husband devoting most of his time to his study of mammals and life zones. Both are equally interested in birds and mammals and have helped each other in preparing numerous books and bulletins.

After years of experience in wilderness places, during which they have slept in the open, often without putting up their tent, both are agreed that animals are not so wild or savage as is generally supposed.

In all of his experience Mr. Bailey declares that he has never been attacked by any animals except field mice and gophers, with which, he confesses, he took undue privileges. For instance, in studying gophers he recalls putting *Geomys* in the bathtub to see if he could swim. *Geomys* could not, and quite naturally felt a little peeved by the incident.

Watchfires are unknown in the Bailey camps, and the still beauty of the night is rarely marred by the staccato of pistol or gun. Sleeping bags are laid on the ground, or cots are set up beneath some friendly tree, and the stars, twinkling through the branches, furnish a friendly light. The voices of night birds, the chirping of insects, and the occasional cries of nocturnal animals but afford new interest.



ALL IN THE FAMILY

The naturalist and Dipodomys baileyi, *a kangaroo rat, one of the many creatures named after him*

"Capital music," says the naturalist, describing a timber wolf's midnight serenade to the moon.

He dismisses the subject of watchfires simply. "Too much trouble and unnecessary." And Mrs. Bailey adds: "For tenderfeet."

"WHO CARES AT ALL FOR MOUNTAIN LIONS?" QUERIES THE NATURALIST

Grizzly bears, mountain lions, and timber wolves have prowled about them while they slept, leaving their tracks to show how close they had approached, yet, secure in the faith that these animals will not harm those who do not frighten or disturb them, these naturalists have slept soundly.

Mr. Bailey's faith in mountain lions dates back to 1889. He had been collecting specimens on a ranch at the foot of the Santa Catalina Mountains of Arizona, and wanted to explore the top of a nearby peak. So borrowing a mule he set out alone over the thirty-mile trail with a blanket, traps, and gun, and "grub" enough for several days. At the top he found the dilapidated remains of a charcoal burner's cabin, and a corner of this he used for a camp. When, during the night, he heard queer noises, he found the picketed mule trembling and snorting. Morning revealed the tracks of mountain lions around the cabin—and right here it might be stated that Arizona mountain lions are likely to be almost as big as African lions, weighing from one hundred and fifty to two hundred and fifty pounds. "I didn't care for them," Mr. Bailey states calmly. "I didn't try to hunt them, having only a shot-

gun with me. I couldn't see to shoot them anyhow at night, and I had never known of their bothering people, though they often do kill mules and horses. They were around every night, and I found grizzly tracks too. My mule was so nervous all the time we were up there that I could hardly mount him. I found many interesting specimens, and by shooting small game made my grub last eight days. When I returned to the ranch the people were organizing a party to hunt my bones. The mule was greatly delighted to get back to civilization."

At the beginning of his field work Mr. Bailey had realized that the proper study of birds and mammals required that one be familiar with the plants on which they feed. Consequently he has become almost as adept at identifying the different trees, shrubs, and grasses as he is at naming the animals. Nevertheless, he once had an adventure involving a plant.

"Look out for your horses, boss", a New Mexican rancher had warned him, "you're in the Sleepy Grass country!" Mr. Bailey laughed. He had heard of the sleepy grass of the Sacramento Mountains, but had considered it a superstition. Examining the grass he immediately identified it as an ordinary species, so he turned his horses loose and pitched camp. Next morning he found the horses in a state of lethargy from which no amount of persuasion could stir them. For three days they could scarcely be made to travel, and even then, admonished with whip and spur, the best time they could make was about six miles a day.

The scientist returned to Washington with specimens of the grass, which chemists examined to discover why it made the horses behave in such fashion. The botanists, too, identified it as a common species which, apparently, nowhere else in the country acts as an opiate. Therefore it was tested to see if it contained some poison drawn from the soil, or was infected by some insect, mildew, or mold, but the plant kept its secret and remains as much of a mystery today as ever.

While it is impossible to measure definitely in dollars and cents the value of Mr. Bailey's studies, it can be said, without exaggeration, that he has been instrumental in saving this country millions of dollars by devising ways to eradicate predatory animals and to conserve valuable species in danger of becoming extinct. His various pamphlets, describing life and crop zones of different parts of the country, are standard publications, telling just what plants, birds, mammals and amphibians are to be found in each locality, and what are their habits. He is the author of numerous books and pamphlets which are valuable, not only from an economic, but also from a scientific and educational standpoint. He was a contributor to the first number of Nature Magazine and has appeared on its pages regularly since. The National Museum at Washington contains extensive evidence of his zeal and skill as a collector. He has contributed more than ten thousand specimens of mammals, and numerous other specimens.

Scientists who discover new species of animals, new plants, or minerals, are often honored by having their finds named for them, and here again Mr. Bailey's achievements speak for him. His name, suitably Latinized, has been conferred upon many species of animals, including a lynx, a cottontail rabbit, a field mouse, and a gopher, as well as a lizard, a fish, and some plants and shells.

Crotophytus collaris baileyi is an emerald-tinted lizard, with a neat black collar, that hails from the Painted Desert of Arizona, where Mr. Bailey discovered him in 1889. "Crotophytus Jr." measures three and a half inches from nose tip to tail tip, and lives in a grass bowl atop the naturalist's desk in his comfortable study in Washington. Each day he is regaled with insect tidbits, garnered by the scientist himself.

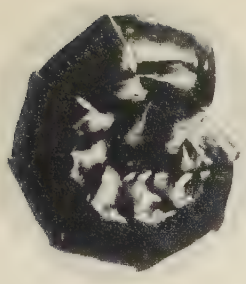
Dipodomys merriami, a gentle little kangaroo rat from the desert occupies a well equipped cage on the library table, and downstairs in the vivarium are many small mammals kept for observation.

Mr. Bailey's study reflects not only the woodland, but art and literature. On a wood panel above his fireplace crouches a tiger, almost life size, the work of the celebrated animal painter, Charles R. Knight. On the walls hang numerous paintings and photographic studies of different forest friends, both birds and animals.

A good scientific library, especially rich in modern works on birds and mammals, surrounds the two desks in the alcove where the Baileys work, and from these desks flow over the country a wave of information on the native wild life in its close relationship to man.

For more than six months the editors of Nature Magazine have been at work preparing for the third special geographical number of our magazine,—the Florida Number. Of course Mr. Jex has made one of his inimitable covers for this issue. Governor Carlton of Florida has written the leading article, reflecting his appreciation of the importance of the resources of Nature which his state holds. For the articles on trees, flowers, fish, mammals and birds the editors have sought out individuals preeminently qualified to write on these subjects. The issue is definitely one worthy of a place beside its two predecessors, the California and New England numbers.

In the instance of both our other special issues, there has been a considerable demand for extra copies. The California number, for example, is now entirely out of print. Extra orders for the Florida number, therefore, should be placed in advance in order that the demand may be met at the time of printing. Four copies of this issue will be sent to any four addresses for one dollar.

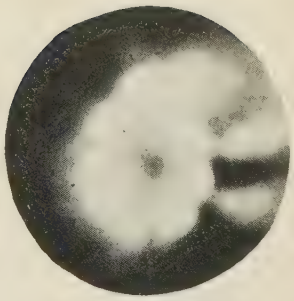


READY FOR REST
She coiled up on her left side when sleepy or frightened

MISS PHENGODES

A Gem of the Night

by Samuel H. Derickson



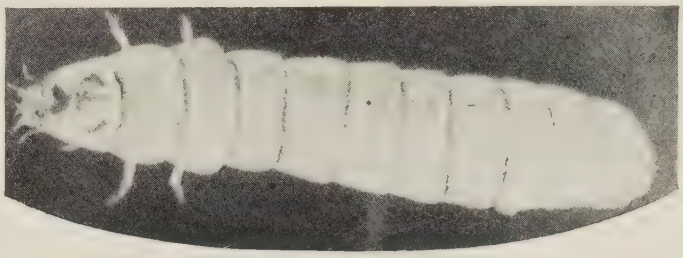
SELF-PHOTOGRAPHY
Miss Phengodes lights the plate. Note the luminous segments

"Ho Prof. Come quickly. Tell us what this is." The voice of one of the party of midnight hikers rang out thru the darkness. "Prof", who was always lagging behind, "looking for something", hustled along the winding path that skirted the crest of the mountain. He soon came up to the little band, rather impatient at the disturbance; then, when he saw the object around which his students were grouped, he quickly dropped to his knees to hover over it.

"Well! Well! Isn't it a beauty! A veritable gem of the night! I don't know what it is, I never saw it before".

Had it been light, those who looked would have stared at each other in astonishment, for "profs" are supposed to know everything, and they knew this professor had trod this mountain around Governor Dick since,—well, since before most of them were born and long before any had attended his "bug" classes.

There it lay in its circular cell in the soft black loam emitting its precious light, rays of yellow and green and blue. Was it a diamond brooch, the cherished adornment of an Indian maid whose tribe first trod this winding path? Were the rays from the eight luminous points on that glistening circle of maroon and black but the release of sunlight that had pulled invisible elements from the air and started them on their way to rare and lustrous beauty? No one had touched it. A bit of bark from a fallen tree nearby had formed the cover of the "jewel case". This had been brushed aside by a passing shoe; otherwise the glisten of this circle of "diamonds" might never have fallen on human eye.



OFF WITH RUSSET, BLACK AND YELLOW!
"A creamy white she lay, and from every part of her naked body shone forth a halo of light"

Gently the gem was lifted from the case and laid in the palm of the professor's hand. The whole hand was visible by the effusion of its light. Suddenly the circle of gems began to straighten and the line began to move. A slight turn, and two rows of lights, as from the windows of a trolley car when viewed from above, shone out. Surely it was not reflected light, for the moon, for which the hikers had been waiting, was just rising over a distant bluff; and the gleam was too steady to be the reflected twinkle of a star. Yes, it was a glow-worm. Not one of the ordinary kind that may be seen commonly around the garden or lawn, but the larva of a very rare insect. Indeed a lucky find for the night hikers.

The professor let it creep over the face of his watch. It was twelve thirty-five. Even the figures of the dial of the second hand were visible by its light. When its movements were interrupted it would roll itself into a ring and lie on one side, its position when asleep in its cell under the piece of bark. The twelve hard shiny overlapping plates of the upper side of the body served as a shield for the softer parts below. Each shield was black with two large oval spots of rusty brown. The head could be completely retracted under the first hard protective plate. This was indeed a wise provision for the protection of the three pairs of sensory protrusions which were always pushed out when the animal moved.

When the curiosity of the little group of Nature lovers had been temporarily satisfied the precious little object was carefully tucked away in a tobacco box with some leaf-mold and moss.

The next day the glow-worm was the center of attraction. Dozens of boys and girls went willingly, perhaps for the first time, into a dark closet to see the new pet perform. There seemed to be no limit to its production of light, and for the glow-worm, no limit of new experiences. Now she posed in full modesty before the camera for her first portrait. A few minutes later she had her first experience in a photographic darkroom. She did what very few individuals can. She lay down on a photographic plate for thirty seconds and took her own image with her own light and no other.

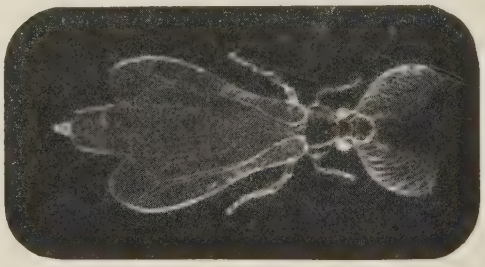
After a few experiments with the camera her patience was exhausted and efforts to obtain other pictures at that time resulted in grotesque failures. We turned our attention toward finding the real name of our new possession.

First to the State Capitol, but although the insect collection in the Museum was diligently searched, not one of her relatives was to be found. The office of the kindly curator was next beseiged. He gazed upon her and after a moment's reflection dug out of his desk a shallow paste-board box in which were two life size photographs, and the shell of what was probably a near relative of our specimen, and a newspaper clipping consisting of a first page head-line and almost two columns of description of the "Wonderful Glow-worm".

A THING OF BEAUTY
Her color is yellowish brown with a median row of large whitish spots

The newspaper article had been written by one of the city's prominent naturalists to whom the specimen had been given by a traveler who found it on a mountain in an adjoining county. The article stated that the specimen had been sent to Washington and was unknown to the scientists there. It had thus remained unidentified when it was presented to the curator of the state museum. It was still unnamed, and broken to such an extent that it could scarcely have been identified in the usual way.

We next introduced our specimen "incognito" to some of our insect loving friends in the Department of Agriculture. One of them, with a knowing look remarked to the other,—"Champ, that looks something like your Clarks' valley specimen that you sent to Barber". And thus from A. B. Champlain we learned that we had a Phengodes. A photograph and a detailed description sent to H. S. Barber brought a statement from that official in the National Museum at Washington that we had a *Phengodes laticollis* Lec., or less technically, as we called her thereafter, Miss Phengodes. We learned, too, that she was not yet mature, in other words a larva, although she differed from her mother but slightly and shared with her the power to illumine her way. Indeed she used her candles for a more romantic purpose,—to beguile her future husband into the fastnesses of the forest where the moonbeams could not follow, and there after the follies of the night, to wrap her enfeebled body with its fast fading glimmer of light around a few score pearly eggs, and die,—embracing the hope she had contributed to the future generation.



HER WOULD-BE SUITOR
A pen sketch of the male. He produces no light. Below is a dorsal view

Our next care, now that we knew her name and something of her family, was to provide a home and the other comforts of life for our charge. She had taught us where she chose to sleep, but what would she eat? Yes, that was the problem. We searched the scant literature for a bill of fare and with the few suggestions gathered we offered her soft diet such as shell-less snails, slugs, and earthworms; and for something with more spice, spiders, ants, meal-worms and other insects. But with all these tempting dainties around her she persistently refused to eat, even over the holiday season, unless she sneaked at the food when unobserved and left no trace of a repast. At first we were greatly concerned for her well-being on what seemed like a hunger strike, but as she remained in apparent good health and was always ready to perform when demanded, we concluded that she had eaten her fill in early summer when her prey was young and tender and that, like many insect larvae, her fast was a natural occurrence in her life history. She did not, however, undergo the extensive changes in body structure nor assume the completely quiescent state orthodox insects seem to think necessary.

That she could have slain any of the animals offered her as food may be seen from a study of her head. You will observe the prominent sickle-shaped mandible or jaw of the left side arising just in front of the leg-like palp and extending across the middle line. It overlaps the point of the similar weapon of the right side, which is too deeply shaded to be seen in the picture. The mandibles or jaws can be opened wide like ice tongs and when sunk into the soft flesh of a snail soon inflict a fatal wound.

When we think of the comforts, yes the necessities, of life, we think not only of food but also of raiment. This is all the more serious, as any married man knows, if you are considering the necessities of a female. We soon discovered that Miss Phengodes was no exception in this respect. We had prepared for her a beautifully soft bed of leaf-mold in a spacious apartment, the walls of which were heavily coated with the paint that had been left in the bucket some years before. For her covers, bark was provided from the limbs of a dead chestnut, the soft inner surface turned down. A mosquito net kept intruders out but protected Miss Phengodes and prevented her escape. With all this, what more could a young miss want?

Upon peering in thru the mosquito bar one morning we were startled to find her outer garment lying crumpled outside her sleeping apartment. Had the large spider that we had intended for her repast smitten his mistress and devoured all but her covering? We removed the intended victim, not too gently, I fear. Did he seem fatter than the evening before? Gently we raised the cover. Ah! there slumbered our precious miss,—but not as we had seen her sleep before, clad in her russet and black and yellow; she lay stripped of her colors, a rich creamy white, outstanding in the shadow. What a wonderful vision of future possibilities! A halo of light shone round about her, and we quickly darkened the room that the beauty of her radiance might be heightened by the contrast. The light

that had previously emerged from separate points along the side below each breathing pore now shone forth from every part of her naked body. She was soft and velvety to the touch and her previous nonchalance was replaced by a timid modesty and efforts to conceal herself with evident fear of bodily harm. She had shed her hard outer covering.

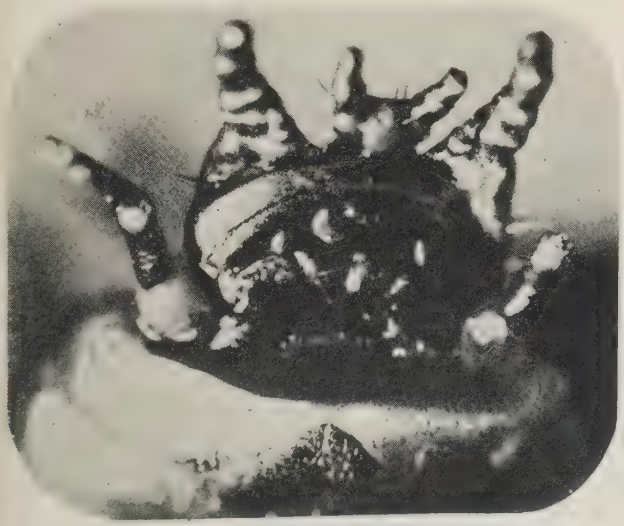
Urgent duties of the day prevented further observations, although time was taken to preserve her cast-off garment. Our next visitation, on the evening of the same day, found our miss graciously dolled up in a new outer cover of the same fashion and colors as the one she wore when we first met her. She was less rigid, more pliable when held closely and much less eager to escape than she had been when we disturbed her in the morning. We were surprised with the speed with which her new dress was completed. It was shaped and fitted and dyed all in less than a day.

We had not taken accurate measurements of her earlier so that we cannot say whether she increased in size with this change of costume or not. If she did, it was not noticeable. When we left the summer resort Miss Phengodes was moved in her paint bucket home to the cool animal room adjoining the biological laboratory where, surrounded with hydra and earthworms and crayfish and frogs and snakes and turtles and chipmunks, she took up her abode for the winter, and dug herself safely in.

REVEALING HER SECRETS

The longitudinal folds below the abdominal segments give off her light

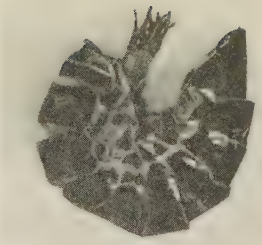
During the warm weather we frequently found her moving about on the leaf-mold but as the cold came she remained in her cell under the bark. When this covering was removed she burrowed beneath the leaf-mold and coiled as before. Her emission of light was continuous during the warm weather but became weaker and weaker as the temperature fell until it entirely disappeared as the night air neared forty degrees Fahrenheit. A few minutes in contact with the warmth of the hand was sufficient to renew the luminous glow which continued as long as warmth remained, but faded away when the insect was returned to the cold.



THE POWERFUL HEAD

No clinging vine is Miss Phengodes, but a real Amazon, as these powerful mandibles clearly show

Her next experience, and accidentally, her final one, occurred in an effort to make a contribution to science. The program for the Easter meeting of the Pennsylvania Academy of Science was being prepared and it was requested that Miss Phengodes appear to add her history to the literature of her tribe.



THE OUTER GARMENT

The lady, quite feminine, discards an old dress

For this additional photographs more completely portraying her interesting features were desired. She consented very unwillingly to this procedure, if indeed she may be said to have consented at all. Finally while being held sufficiently firmly against a glass photographic plate she exerted herself so strenuously that she suffered internal injuries from which she died.

Her body was carefully embalmed and viewed with much interest by the hundreds of scientists who attended the meeting of the Academy and who listened to the reading of the contribution she had made. Her story appears in the Proceedings of the Pennsylvania Academy of Science, Volume 2—"Notes on the Larva of *Phengodes laticollis* Lec." She now lies in state in the museum of Lebanon Valley College.

For many weeks the mountains were searched for relatives of our Gem of the Night. Stones were turned, logs rolled, leaf gullies raked, but all in vain. Phengodes were rare indeed. Hope died down to embers of the forgotten. Two years had passed. One bright morning in May an Azalea that overhung the deep cut in an old mountain road was being rescued from the powers of erosion. Sand and leaf-mold rolled down the bank and with it something russet and black caught the eye of a fifteen year old lad. "Daddy, here's another Phengodes!" There was nothing uncertain in the proclamation, but daddy, with the close resemblance to a local species of centipede in mind, turned a sceptical eye. Sure enough, the lad was right, a beautiful Gem of the Night lay coiled in his hand. The find was a mile, as the crow flies, due north of the former one and near the top of an adjoining ridge. Gem number two soon changed her attire and appeared in a creamy white which we suspect was her bridal gown. When evening came she sought the most conspicuous place from which to display her brilliant glow of gems. A crystal dome with a large mouthed glass funnel in the top perched on a stump in an open space on the mountain top became her courtly estate. Night after night she displayed the elegance of her beauty but no suitor was beguiled into the trap. After weeks of waiting, yellow stains marred the white gown and, her radiance dimmed, in unrequited love, she died.

BEARS WHO WENT TO SEA

by Paul Bonnot

OKESON BONNOT

MANY thousand years ago a mammal closely related to the bears sought to escape its enemies; or to find a more congenial environment in the sea. Its legs were modified into flippers, and in place of fur to preserve the bodily warmth, it put on a harsh rough hair on the outside, and developed under the skin an insulating covering of tough tissue which is impregnated with oil. To-day these specializations are well developed, but the animal is still in the process of transformation. The young, unlike the young of most other marine mammals, must be born on land, as they cannot swim at birth, but must be taught that very necessary accomplishment.

The first of the world explorers to see these huge, roaring animals called them sea lions, an unfortunate mistake. They have been so called ever since. A more appropriate name for them is sea bear, a name sometimes applied to the northern fur seal. The sea lion and the fur seal are close relations. Both have small external ears, and both can turn the hind flippers under and forward when on land. The sea lion, however, has only a rough, harsh pelage of coarse hair. The fur seal also has the coarse hair, but, under it and about half as long, is the soft rich fur from which it derives its name.

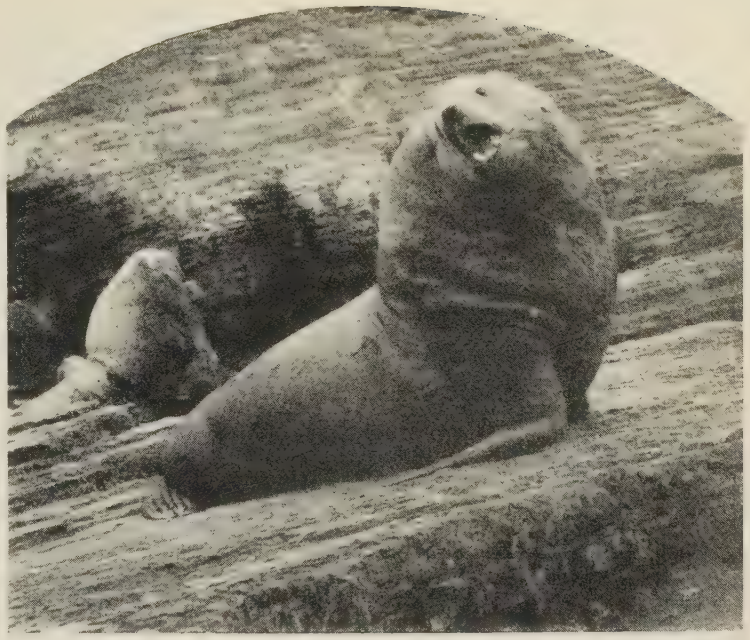
In California waters there are two species of sea lions: Steller's sea lion, *Eumetopias jubata,* and the black or California sea lion, known as *Zalophus californianus.*

PAUL BONNOT, *the author of this article, is connected with the Bureau of Commercial Fisheries of the Fish and Game Commission of California. He has carefully investigated the condition in the sea lion rookeries up and down the West Coast, and has studied deeply the relation of these picturesque mammals to fishing conditions. There is no economic reason, he believes, for their continued slaughter. They do not, as alleged, seriously deplete the fish supply. As for hunting them, as a sport it ranks with shooting barnyard chickens and tame deer. Ignorance, wanton cruelty, and short-sighted commercialism are the trinity bent on completely exterminating them. The California Game Commission deserves the support of the entire thinking populace in its attempt to stop the slaughter of these animals and protect them before they are but a memory.*

Steller's sea lion is found from Bering Sea to Santa Cruz Island. The breeding range is from Bering Sea to Santa Rosa Island. They are found the year round throughout their range, though the bulls, for the most part, disappear from the California coast during the winter and spring. The general opinion seems to be that the bulls migrate to Alaska during this time. The animals are light gray in color when wet, but turn to light brown when dry. The under surface is sometimes almost black. The bulls are much larger than the cows. A full grown bull will weigh between fifteen hundred and two thousand pounds, while the cows weigh between six hundred and a thousand pounds.

The California sea lion is found from the Farallon Islands south to central Mexico. The breeding range is from Point Carmel, in Monterey county, California, to an unknown point in Mexico. In the past, the California sea lion was much more abundant and maintained rookeries as far north as the Farallones. At the present time, they are rare north of Point Carmel. The California sea lion is dark brown in color when wet, and an ochre yellow or brown when dry. The bulls weigh from eight hundred to a thousand pounds, and the cows from five hundred to seven hundred pounds. The skull of the bull has a high keel which gives the profile of the face a concave outline.

Sea lions are polygamous animals, one bull generally taking care of from five to



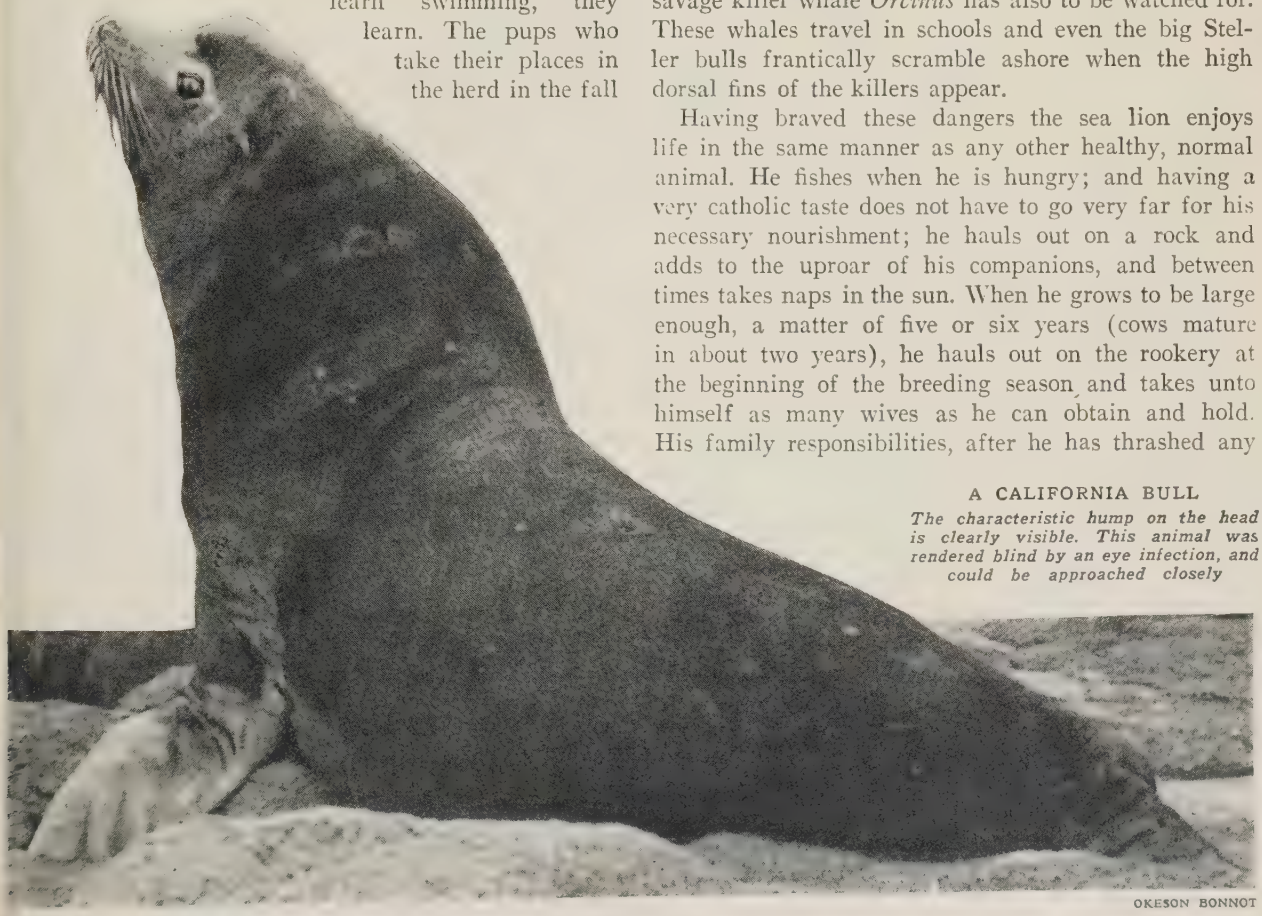
A STELLER MALE EXHIBITS HIS WOUNDS
He won them in honorable warfare to protect his herd of cows. Note the close resemblance in physiognomy to the bears

OKESON BONNOT

twenty cows. They begin to collect on the rookeries during May. The pups are born from the first of June to the middle of July. By the end of August the bulls leave and the rookery is broken up. A few animals may be found on the regular rookeries at all times.

Life, as faced by the sea lion, is a real struggle for existence. They are born on bare offshore rocks, some of which, when it storms, are totally under water. When this happens the pups unable to swim are drowned. A great many are drowned every year in this manner. Another danger in the life of a sea lion pup emanates from its own kind. When its male parent engages in battle with some disturber of the family tranquillity or takes a surly part in subduing the argument of a couple of noisy, brawling cows, such small fry as pups do not mean anything to him. If they are not spry enough to get out from under they are "stepped on." When this occurs the pup seldom survives, as "father" weighs about two thousand pounds. They must become accustomed to rough handling. When it is time for them to take their swimming lesson they are unceremoniously dumped overboard. The cows stay with them and demonstrate. They are rather confused at first, but their strangled bleats elicit no sympathy. When "mother" decides it is time to learn swimming, they learn. The pups who take their places in the herd in the fall are a picked lot, and few, compared to the number actually born. Having graduated in swimming they stay with their mothers until time for the arrival of the next pup. The cows mate a few days after pupping and are therefore pregnant practically all the time. Having become proficient in the water and independent of their rocky birthplace they encounter new danger. A big shark will make a meal of a sea lion, if he can catch him. The shark must be large, as a good sized sea lion is no mean antagonist. The savage killer whale *Orcinus* has also to be watched for. These whales travel in schools and even the big Steller bulls frantically scramble ashore when the high dorsal fins of the killers appear.

Having braved these dangers the sea lion enjoys life in the same manner as any other healthy, normal animal. He fishes when he is hungry; and having a very catholic taste does not have to go very far for his necessary nourishment; he hauls out on a rock and adds to the uproar of his companions, and between times takes naps in the sun. When he grows to be large enough, a matter of five or six years (cows mature in about two years), he hauls out on the rookery at the beginning of the breeding season and takes unto himself as many wives as he can obtain and hold. His family responsibilities, after he has thrashed any

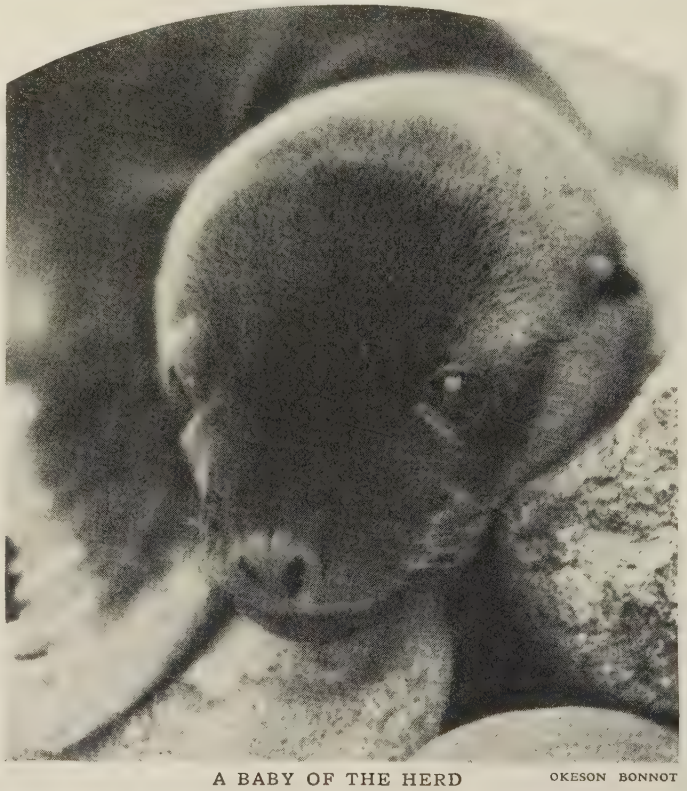


A CALIFORNIA BULL
The characteristic hump on the head is clearly visible. This animal was rendered blind by an eye infection, and could be approached closely

OKESON BONNOT

other enterprising bull who dares to trespass on his bit of rock, and bred the cows under his jurisdiction, are at an end, and he goes back to his fishing and sleeping in the sun.

In most places the sea lions have been harried by hunters and sportsmen, out for a little target practice. At these places they unload at the mere sight of man. At Año Nuevo Island, a Federal Lighthouse Reservation, they have been protected for a long time. Here they stand in small awe of man. The big herd bulls resent any intrusion and it behooves the investigator to respect their dignity and give them room. The average rookery is not a place on which to play tag with a very spry two thousand pound animal. The sea lion is one of the few wild animals that is careless about noise. It is so careless of it, in fact, that the report of a gun on a big rookery is not even heard fifty feet away. The uproar goes on unabated night and day, as there are always a few animals, at least, on hand to keep it from dying out. When they are disturbed, and a big group of them are roaring and barking at the intruder, the sound resembles the breaking of a heavy sea on a steep rubble beach. Although gregarious in their habits they are not very sociable. There are always individuals moving about and every animal touched takes "a pass" at the disturber. There are not many actual fights but all of them seem to have very irritable dispositions. If some one else's pup gets in the way of a cow he is seized by the back or neck and hurled ten or fifteen feet away. If he happens to land on another cow she generally gives him another boost. Thus the family life of the sea lion is rather strenuous.



A BABY OF THE HERD OKESON BONNOT

No easy life has he. If it isn't a bull stepping on him, it's another cow resenting his existence. And he has to learn to swim

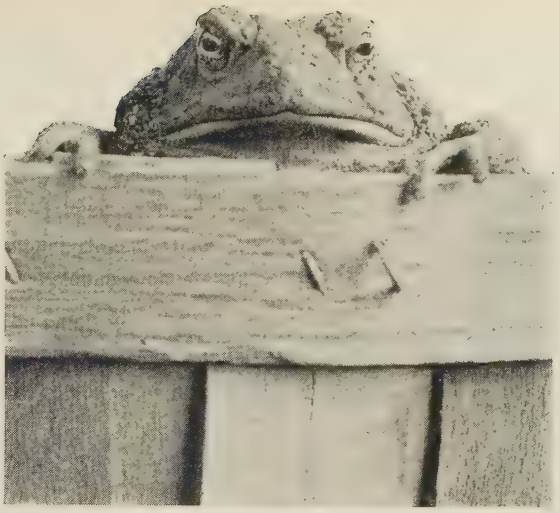
The sea lion could hold his own against his natural enemies, but his real troubles began when man discovered that he was insulated with several inches of oil-bearing blubber and that his hide made good leather. Nearly two hundred years ago the slaughter began on the West Coast. Countless thousands of sea lions died for the enrichment of the oil hunters, until by the beginning of this century only a remnant of the vast herds which once roared and fought on their offshore rookeries is left to carry on the species. And now, although brought down in numbers almost to the point of extermination, the sea lion has a new enemy to face. The fisherman claims that the sea lion eats a stupendous amount of food fish. This has not been proved. In fact such proof as is available shows that the sea lion is probably of benefit to the fisherman, but fishermen are prone to be dogmatic. In some other parts of the country the fisherman has been listened to, and professional hunters have all but wiped out the remaining sea lions. Having killed until the few which are left do not make profitable hunting, these men have now come to California. They have encouraged the fishermen's suspicions that the sea lions are the direct cause of the growing scarcity of certain classes of commercially valuable fish, in some districts. They have arrived at their conclusion, however, without taking the trouble to examine the stomach contents of a single sea lion out of the thousands they have killed. Their sole concern has been scalps, to be turned in for a bounty, and with the removal of that their interest was at an end. They are also rather careless with figures. According to them there are from forty to fifty thousand sea lions in California. As a matter of fact there are approximately nine thousand of both species.

In June, 1927, there was a good sample of the work of the professional sea lion hunter on Flea Island, near the west end of San Miguel Island. Flea Island supported a rookery mixed with both species of sea lions to the number of four hundred. It lies in Fish and Game District 19, which at that time was closed to any killing of sea lions. After the passing of the hunter the place was a shambles. Every pup was dead, as they were not able to escape, and numerous adult animals were scattered about. Only the scalps were taken. Pools of stagnant blood were everywhere and in the kelp, fifty yards from shore, floated the hideously distended bodies of a dozen adult animals, most of which still possessed their scalps, showing that they had sunk when shot, and only floated with the generation of the gases of decomposition.

These are not the methods for controlling our natural fauna which will be conducive to the best interests of all concerned. This sort of thing is comparable to the wasteful and useless slaughter of the bison, to the ruthless killing of the egrets by the Florida plume hunters, and to the extermination of the sea otter. A few men realize a quick profit for a few seasons—and one of our most interesting and least known mammals will be numbered among the animals of the earth which have passed, through the ignorance and greed of man.

M'sieu Toad

He is Rescued Just in Time



"GOOD MORNING TO YOU"
Quoth M'sieu Toad when spring first came

by Marjorie Shanafelt

A VERY fat toad once wandered away from his feeding patch to investigate some rough soil near an opening that let light into a basement window. The window belonged to a new building. Strong white horses were pulling a scoop back and forth around the building preparatory to making a lawn out of a bare spot. The feet of the horses went thump, thump, and a foot of one horse would have stepped upon the toad had he not taken a long leap. He landed on some loose dirt that slipped, and the toad, on the miniature land slide went down, down, down into the window space.

The sun was shining into the opening and the toad found a goodly number of delectable flies buzzing against the closed window. He became so interested in eating every fly that buzzed that he forgot all about getting out of the deep hole. There was quite a pile of dirt there and every few minutes a little more slid down into the hole as the scoop and horses went past. When the toad grew sleepy he backed against the pile of dirt and with his strong hind legs kicked himself in and took his rest in comfort.

A couple of weeks went by. Scattered showers kept the dirt in the hole moist. The flies continued to yield the toad ample meals, so that he grew fat, and when workmen came along and fastened down a heavy iron grating over the light area he didn't fret a bit but kept on eating blue bottle flies. Once in a while he saw people peering out at him from the other side of the glass. Evidently the room was not being used much for the window was never opened. He was perfectly content, nevertheless. One might envy him in the sufficiency of his small world.

REGISTERING CONTENTMENT
Ugly, you say? Ah, my friend, no mere photograph can show the beauty of the gold-spangled eyes

When the days grew hotter and drier his window area was not so comfortable and finally he realized that he must either get out or perish, but alas! He couldn't jump high enough to reach the surface, and if he could the grating would throw him back again. He jumped against the glass, but the few people who saw him couldn't seem to understand. When they saw the gleam of his yellow stomach against the glass they laughed and said, "Just see how good M'sieu Toad feels!" But he didn't feel good. His skin was drying up! The dirt in the window area had baked dry and then crumbled into dust. He could not get away from the heat of the sun and air. He despaired!

The Girl-Who-Works-in-the-Museum came back from a long vacation. The boys in the workroom said to her, "Say, you should see the whopping big toad that is living in one of the storeroom's window areas."

"Let's go see him now," said the Girl and away they scurried. They peered through the glass. There lay the poor toad, his legs pulled up close to his body, his eyes dull and sunken.

"Why, he is dead!" lamented the Girl.

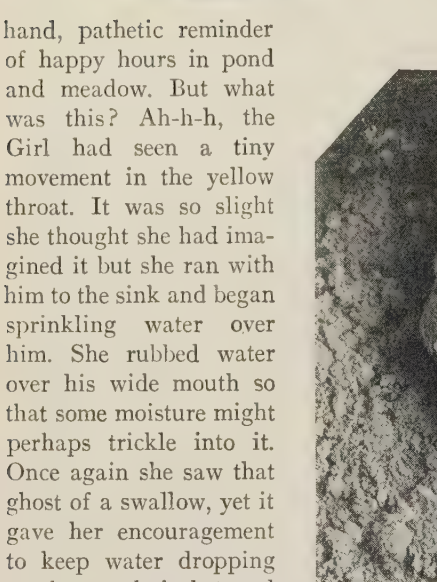
"O no," declared the boys. "We'll poke him with a stick and you'll see him jump."

They opened the window and prodded him with the end of a yard stick, but M'sieu Toad didn't jump. He didn't even wink.

"He has died for lack of moisture! Why, oh, why didn't you boys take him out long ago," scolded the Girl. "At any rate, he will make a good museum specimen." And she crawled through the window far enough to get the toad in her hand. Already hungry black beetles were nipping at his joints. The beetles scuttled away as the Girl lifted up silent, motionless M'sieu Toad.

The Girl looked him over. He couln't have been dead long for he was still limp. She stretched out his long legs and tucked them back again along his sides. She spread out his comical front feet on her own fingers. She turned him over on his back. He lay there on her

OUT FOR A SHORT EVENING STROLL
And very gay, with the prospect of more flies tomorrow



NOT ATTACKING THE TOAD ABOVE
But preparing for sleep. His legs shut up as tight as the clasp on a lady's purse

hand, pathetic reminder of happy hours in pond and meadow. But what was this? Ah-h-h, the Girl had seen a tiny movement in the yellow throat. It was so slight she thought she had imagined it but she ran with him to the sink and began sprinkling water over him. She rubbed water over his wide mouth so that some moisture might perhaps trickle into it. Once again she saw that ghost of a swallow, yet it gave her encouragement to keep water dropping on the rough jacket and closed mouth for another fifteen minutes. At the end of that time one gulp was following another although still rather weak and irregular. The Girl had rescued him, literally, at his last breath.

The Girl sent the boys for a basket of dirt and when it came, soaked it well. On this wet earth she put M'sieu Toad, packing wet dirt all around him. Gradually his eyes lost the glaze of death, and the Girl bore him in triumph to her office, where for weeks his basket sat on a small table near her desk.

Each morning it was as though the basket held no toad, for no toad was visible, only a depression about the size of a small saucer marked the place where he lay buried. One could dig him out, very disgusted at being disturbed. At dusk he came out of his own free will but before daylight he had kicked himself way down to the very bottom of the basket. Office flies found existence a dangerous business. A buzz-z-z on the window pane sent two or three persons in that direction. As fast as caught they were popped under the cheesecloth stretched over the basket top precisely to make a prison for juicy flies.

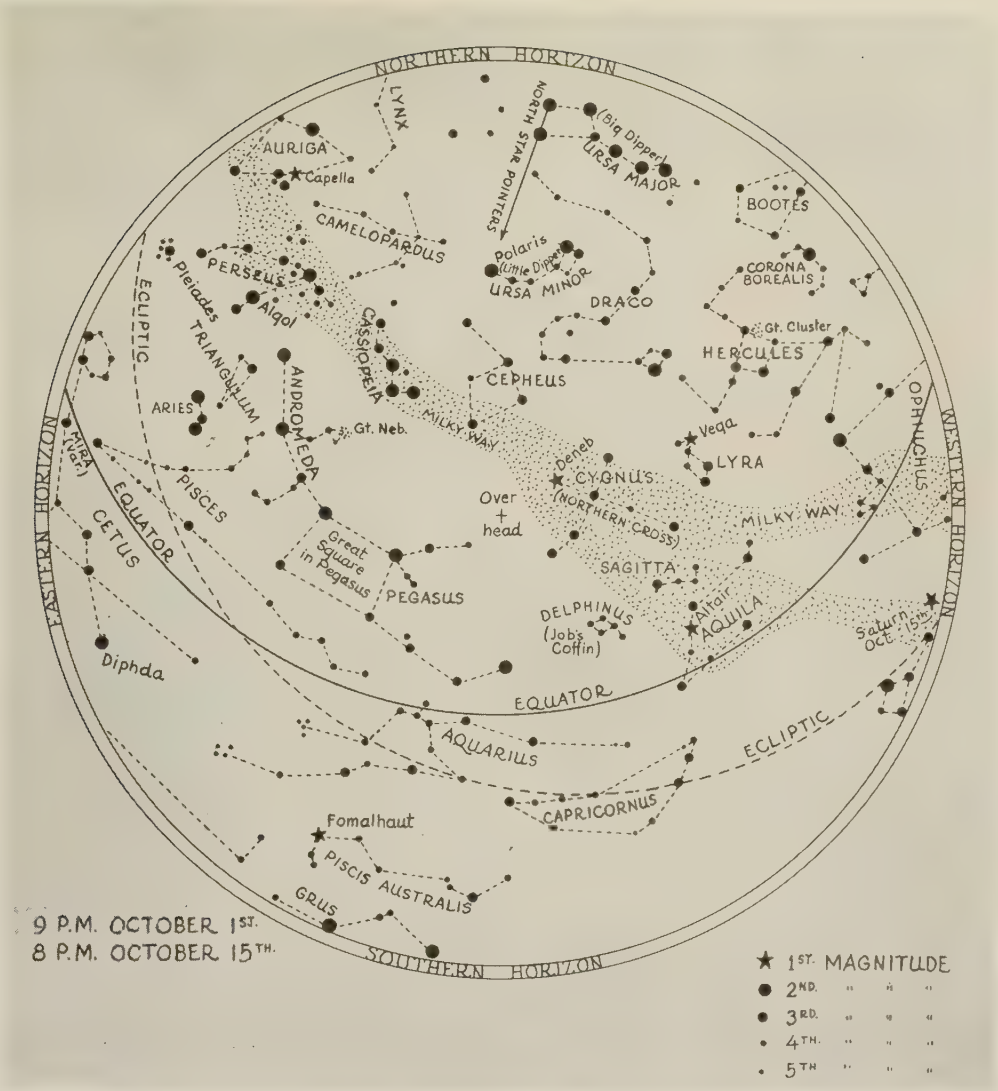
There came a day when he wouldn't eat. Fat flies impaled on all but invisible sticks did not tempt him. It was quite evident that with the approach of fall he had thoughts of hibernation. His remarkable eyes glittered like gold spangled glass. The Girl decided to keep him all winter so she wrapped the basket in foil from a tea caddy to keep in the moisture, and she placed the basket in the cool fruit cellar at her home. Every few days she went to see that the dirt was moist, but she never dug him out because that might not feel good when he slept so heavily.

At length came Spring with its wooing winds, with its sighing rains, its tears and smiles. Through the damp ground pushed the grasses and the early flowers, and up through his basket of dirt pushed M'sieu Toad. How did he know that Spring was dancing across the hills and meadows? How did he know it was time for waking? At any rate, his cold blood began to run more quickly through the cockles of his heart until the muscles in his relaxed legs responded and up through the dirt he ploughed to find the Girl looking at him. Exhausted with the effort after so long a period of inertia, he rested his broad, tremulous chin on the basket's edge and blinked his golden eyes at her.

He was once more a toad of health and ability, and since bluebottles were noticeably scarce, it seemed the proper thing to turn M'sieu Toad out into the open where he could hunt his own meals. So, on the hand of the girl, he rode up and out into the garden. He looked so small and inadequate as he sat in the garden path that the Girl's heart smote her and she would have picked him up again had he not just then caught a breakfast that was winging past, after which he hopped down the path.

In the summer days while working in her garden the Girl often, inadvertantly, tumbled M'sieu Toad out of some shady retreat or found him peering up at her from under some large leaf, whereupon he listened intently to her friendly admonition, "Remember M'sieu Toad, to always beware of area way windows."

ABOUT TO DELIVER AN ORATION
Or at least he has that after-dinner speaker look



TO USE, HOLD OVER THE HEAD WITH TOP TOWARD THE NORTH

The Center of the Universe

Where Is Man in the Midst of it All?

by Isabel M. Lewis

THE SUN with its satellites, of which our earth is one, belongs to an enormous system of stars, nebulae and star clusters known as the Galaxy or Milky Way. It is now estimated that the number of individual stars in this aggregation is of the order of a hundred billion and that these objects form a lens or disc-shaped system that has an extent along its central axis of between two hundred and three hundred thousand light years and a depth or thickness at right angles to its central plane only about one-tenth of its greatest extent. Beyond, above and below the Milky Way, lie what are known as extra-galactic objects, such as the globular star clusters, which are systems spheroidal in shape composed of hundreds of thousands of stars each; the magellanic clouds; the spiral nebulae, or "island universes", and other remote objects many of which are estimated to be millions of light years distant from the earth. Each possibly represents a far-away universe similar to our own galactic system.

A decade or so ago Dr. Harlow Shapley, now director of the Harvard College Observatory, but then at the Mt. Wilson Observatory, made an extensive study of the globular star clusters, more than a hundred in number and at distances from the earth ranging from about fifteen thousand to over two hundred thousand light years and found that they were so arranged in space above and below our galaxy that they appeared to form, with it, a greater spheroidal-shaped system in which the

Milky Way formed a narrow equatorial zone about ten thousand light years in depth and over three hundred thousand light years in diameter. This greater system apparently has its center in Sagittarius mid the dense star clouds of the Milky Way and at a distance of sixty thousand light years from the earth.

Recently a program for a fifteen-year study of distant variable stars in the Milky Way has been undertaken by the Harvard College Observatory under Dr. Shapley's direction with a view to extending our knowledge of the size and shape of the galaxy and its relation to external objects such as the spiral nebulae or island universes and other far distant and faint extra-galactic objects that are estimated to be millions of light years distant.

The study of long period variable stars is one of the most fruitful sources of information regarding the distances of such objects, and throws much light on the distant star clouds in the galaxy in which they also occur. The regions of the Milky Way in Ophiuchus, Scorpio and Sagittarius in the general direction of the center of the system of globular star clusters are particularly rich in such stars. It has been found that there exists a very important relationship between the absolute brightness, or candlepower as we might say, of such variable stars and the period of their light variations. When their apparent brightness has been measured it is a comparatively simple matter to find their distances and the distances of the regions in which they lie. Observations of these stars, therefore, form the basis for some very valuable deductions.

In the great star-clouds of Ophiuchus and Scorpio in the Southern Milky Way, partly veiled by dark nebulosities which lie at distances of only three thousand light years or so from the earth, there are indications from the study of variable stars of the type mentioned that there exists a great central nucleus of the galaxy, the radius of which is about one-third of its distance from the earth and the depth of which at right angles to the central plane of the galaxy is about 25,000 light years. The center of this nucleus, which would be the center of our universe, Dr. Shapley estimates, from a study of the variable stars in that region, is at a distance of nearly fifty thousand light years from the earth and not far distant from the estimated position of the center of the system of globular star clusters mentioned before.

This central nucleus of the Milky Way appears to be analagous to the central condensation or nucleus observable in the photographs of spiral nebulae, such as of the Great Nebula in Andromeda, composed of island universes exterior to the Milky Way and of the order of millions of light years distant from it. Its discovery strengthens the belief that our galaxy itself is an island universe of enormous size and with spiral, flattened form whose great central nucleus is partly screened from our view by clouds of dark obscuring matter.

In this great galactic system, which may be an island universe in a far greater universe, our sun and its satellites is but one of many billion units and is probably moving with other suns around this central nucleus in a period of millions of years, Dr. Shapley believes.

At the present rate at which it is moving through space—about a million miles a day—our sun takes about seventeen thousand years to travel a distance of one light year and over seventy thousand years to travel the distance that separates us from the nearest star. It would, therefore, take over eight hundred million years to travel a distance of fifty thousand light years to the center of the universe. And on such a stupendous scale is our universe fashioned and so great the distances between individual stars that each may travel for millions of years onward through the galactic system with slight chance of collision with other stars!

How many of these suns in our galactic system have satellites accompanying them on their journeys through space is a question that often occurs to us, and it is one that at present cannot be answered, for we have no way to detect the existence of small objects shining faintly by reflected light close to a sun of dazzling brightness. Even before the outskirts of our own solar system were reached the earth would be lost to view in the glare of the sun's rays and the most powerful telescope would fail to reveal its presence. So, though man may study with some hopes of success the problem of the size and extent of the universe, the question of the existence of other habitable worlds attendant on other suns of the universe is one of which we can know nothing at present. One can only reason that it is highly improbable that of all the billions of suns that exist in the galactic system ours alone has an inhabited satellite.

October is a fine month in which to observe the galaxy, as it now arches high across the heavens in a diagonal direction from the northeast to the southwest where it disappears below the horizon in the star clouds of Sagittarius near the center of the universe. One needs a clear, dark, moonless night, however, to observe the Milky Way. It can never be seen to advantage from city streets or near any bright illumination. It is seen at its best in the tropics where one may also see the remarkably fine regions in Argo Navis and Crux of the Southern Milky Way as well as the Magellanic Clouds of the southern circumpolar regions, which look like detached portions of the Milky Way, though they are in fact far exterior to it.

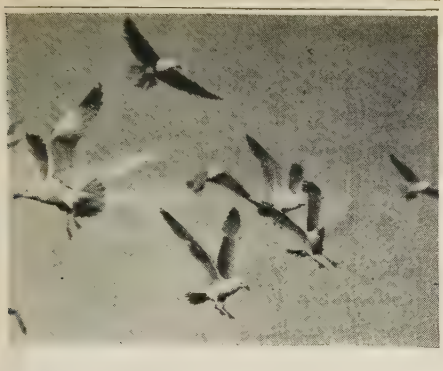
Our Northern Cross in Cygnus is now nearly overhead and The Great Square in Pegasus is conspicuous in the southeast at this time of year.

Fomalhaut in The Southern Fish, the most southerly of the first magnitude stars visible in 40 degrees north latitude, is now conspicuous in the southern sky. The Big Dipper is too close to the northern horizon to be seen to any advantage at this time of year but Cassiopeia is now high in the northeastern sky.

Among the planets, Jupiter and Saturn are now in the evening sky. Saturn is in Sagittarius low in the southwest and sets about three hours after the sun on the fifteenth. Jupiter is in Taurus and rises about 8 o'clock in the evening and is in view all night. This is a fine time to observe this giant planet and the phenomena of its satellites, to be seen with even small telescopes.

Venus is still a fine morning star though it is drawing steadily nearer to the sun as it approaches superior conjunction. It now rises about two hours before the sun.

Mars is still in the western sky but too near the sun to be seen. Mercury will be at its greatest western elongation on October 23 and may be seen for a few days before and after that date in the southeast before dawn.



Catch Wild Life in Action
WITH FILMO

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Photographic DEPARTMENT

Excellent opportunity for comparing results was afforded by the shutter-clicking of the members of the Nature Magazine parties in Glacier National Park. Cameras were an essential item of equipment and varied from Graflexes to the small-sized Kodaks, and included motion picture equipment in several instances. One thing which this variety demonstrated was the uniformity of results in relation to the character of camera used and the experience of the owner. It proved that acquaintance with the machines being equal, the results obtained are about in proportion to the value and amount of investment in the camera. Thus the Graflex with its suppleness and range produced pictures more surely and in more detail than the smaller and less expensive outfits. But, at the same time, what was obtained was what the owner expected in the camera. Which may be a long way of coming to the point that cameras today will produce results for anyone who gives them a little thought and none should be without them.

* * *

In the past, enlargements from 16mm movie film have not been highly satisfactory due to the number of times the original little picture has to be brought up. The Eastman Kodak Company, however, has perfected a machine which seems to have solved the problem and permits a good enlargement up to a three by four size. Many photo finishers have installed this machine and if unable to find one in one's vicinity, the service department of the Eastman Kodak Company at Rochester will be glad to advise.

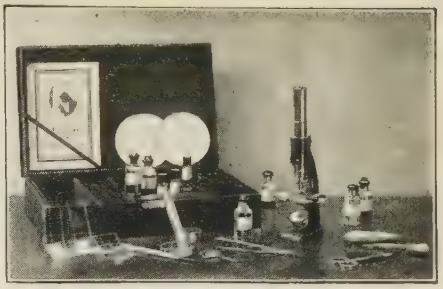
* * *

The Bell and Howell Company has gotten out a new general catalog covering Filmos and their equipment. Amateur movie makers should have one of these on hand because many things are listed which may solve little problems or big ones that have been troubling.

* * *

The First Rochester International Salon on Photography will be held in the Memorial Art Gallery, Rochester, N. Y., from December 7, 1929, to January 5, 1930. The aim of the Salon is to exhibit the best in photographic art and only those prints showing personal artistic feeling and intrinsic pictorial merit will be hung. The number of prints exhibited will not exceed 250. The final date for submission is November 15 and the pictures must be submitted according to conditions laid down by the Salon. This information can be obtained by addressing Mr. Victor Rayment, Rochester International Salon of Photography, care of Memorial Art Gallery, Rochester, New York.

Suggestions are invited as to materials which would be helpful in this department.



The Gem Science Kit

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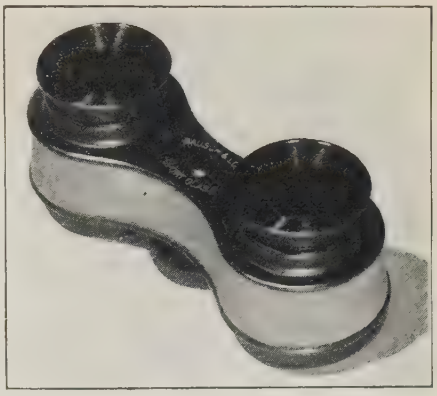
with these inexpensive aids to vision

No matter what your favorite outdoor recreation—one or both of these fine Bausch & Lomb products will help to make it more enjoyable this year. In fishing, hunting, nature study, botany, or in the simple, aimless enjoyment of the open fields, the winding roads or silent forest—the Sport Glass or the Little Gem Microscope will unlock hidden wonders to your eyes.

The Sport Glass is a pocket model that brings distant objects closer to your eyes. Easy to carry and use. Wonderfully steady. And it has a wide, brilliant field of remarkable definition.

The Little Gem Microscope gives to amateurs the magic vision of the scientist. So simple that a child can use it —yet it magnifies small objects 5625 areas. Shows you things you cannot see with the naked eye.

The Sport Glass comes in a variety of handsome finishes at $16.50 to $25.00. Gem Science Kit, complete, costs $27.50. Little Gem Microscope, only, $17.00. Both obtainable at good shops everywhere.



The Sport Glass

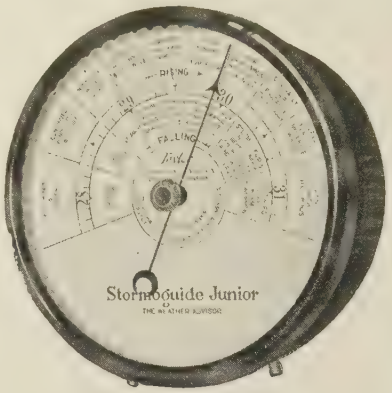
BAUSCH & LOMB OPTICAL CO.
728 St. Paul Street, Rochester, N. Y.

Taylor Stormoguide

does not control the weather but forecasts the kind of weather to prevail 12 to 24 hours hence and does so with high average accuracy; enables you to plan your work, or your pleasures, to organize every phase of your everyday life so you can take advantage of all kinds of weather, good or bad.

When you know the weather will be fine, you can arrange your outdoor activities; when you know it will be cold, rainy, or disagreeable, you can plan accordingly.

The *Taylor* Stormoguide is more than an ordinary Barometer. Its convenience in reading is as marked as the convenience of telling time by the clock as compared to the Sun dial.



The *Taylor* Stormoguide Jr. (#2258) illustrated above sells for $10. It has a 4½ inch white dial; mahogany finished bakelite case; glass crystal, good grade aneroid movement; supporting legs and hanger; adjustable for altitudes 0 to 2,500 feet.

Taylor Compasses

are fine instruments of American manufacture, meeting the needs of sportsmen or hunters. Models to fit any requirements. Open face or hunter cases, bar needle or floating dial types. Every *Taylor* compass has jewelled pivot.

The compass at left is the *Taylor* Leedawl. It has untarnishable silvered metal dial, heavy tempered steel point on which the needle operates; screwed top (no dirt or moisture can get inside with this style of top) white metal case, snap in beveled crystal glass, open face.

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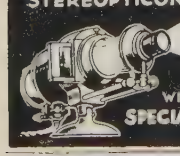

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Educational, entertaining, this fine microscope helps all to know life that can't be seen with unaided eye. Tiny insects look like monsters. Plant and mineral life reveal new wonders in form and color. Used by students, dentists, physicians, scientists—in home, office, school and laboratory. Precise optical qualities.

Magnifies 100 to 250 times. Tilting stand, fine finish, nickel trim, plush-lined case, prepared slide, instructions. At your dealer or direct postpaid. Money back guarantee. Other models $2.50 to $8.50.

Catalog Free

Wollensak Optical Company
862 Hudson Ave. Rochester, N. Y.

A Study of Ants

Dr. Auguste Forel, internationally known neurologist and psychiatrist, has collected into two volumes all his observations on ants, which for nearly seventy years have been his hobby. *The Social Life of Ants* is perhaps the most remarkable work on the subject issued in recent years. Dr. Forel has his theory of ant communication worked out even to being able to describe the different signals used for different purposes; he likewise has tested the intelligence of the creatures, and traced their habits as closely as humanly possible. As interesting as any part of his mammoth work is his description of the many parasitic creatures that impose on the ants—that live in the formicaries and make the slaves feed them. No more fascinating social insect exists than the ant, and Dr. Forel's observations read like fiction, yet ring with truth.

The Starling Again

The much-libelled European starling has another supporter in the Biological Survey of the Department of Agriculture, who in Farmer's Bulletin 1571–F reveal that intensive research proves beyond doubt that the bird is not an economic liability, but an asset. It is a St. George among the May beetles, the clover-leaf weevil, the Japanese beetle, cutworms and grasshoppers. Its numbers may be too great in certain farm communities, and especially so in the roosting quarters in some American cities, but in moderate numbers, it is quite harmless.

Cooking In Camp

Containing as it did much good and practical advice, the article, *Camping on Wheels*, by Arthur Newton Pack, in our June issue has brought in inquiries from our readers as to where certain items of equipment, generally mentioned, can be obtained. Particular stress was laid on the matter of an efficient and compact cooking outfit. There are several good ones on the market and one of these which combines moderate cost with many ideal features is known as the Campingo. This is an imported outfit, made in Sweden and used by various Arctic explorers. We are glad to pass this on to our many readers who annually seek the outdoors trails.

The Pine Beetle

The department of Agriculture again sounds warning against the Southern pine beetle, whose "periodic widespread devastations have been responsible for the destruction of more merchantable pine timber in the states than any other agency." It issues a phillipic on the malign insect in Farmer's Bulletin No. 1586, distributed from the U. S. Printing Office, Washington, at five cents the copy, which lays bare its secrets and advises how to prevent its spread. Ample illustrations help fix the creature and its harmful ways firmly in mind. Men must bind together to defeat such forces of destruction.

John Ruskin—a May-flowering Beauty

Panoramas of Loveliness

DURING their season, Tulips reign absolutely supreme in both garden and home. The early flowering kinds start their color displays during April. New hybrids bridge the gap between the early and late or May-flowering kinds, and among these late blooming varieties are some of the most gorgeous creations in the floral world.

Meet John Ruskin

The favorite Cottage Tulip is a color symphony of salmon, rose and apricot shades, one of the loveliest of *all* Tulips. It truly glitters. Equally charming outdoors or as cut flower. Exceedingly graceful during all stages. Plant it by the hundreds—you'll be grateful that we urged it. **75c per dozen, $5.00 per 100.**

Write for List at Once

Tulip planting time is here! A free list of varieties on hand, together with instructive catalog, will gladly be mailed promptly upon request. Act at once! While the bulbs may be planted as long as you can dig your garden, they should go into the ground during October —the earlier the better. When writing please mention Nature.

ZANDBERGEN BROS., *"Tulipdom"*

7 Mill River Road, Oyster Bay, Long Island, New York

Nurseries at Valkenberg near Leiden, Holland and at Babylon, L. I., N. Y.

NATURE NEWS AND VIEWS

Fooling Hummers

Ralph J. Ayer, a farmer near Colorado Springs, Colorado, has succeeded in taming hummingbirds, even to the point where they will feed out of his hand, and allow him to touch them, according to Miss Frances E. Haines, who reports the feat. Mr. Ayer filled bottles containing sugar syrup near the flowers the birds used, and built little stands for them to rest upon. Later he moved the bottles to the window-sill, and then to his hand, but still the birds came. So eager were they to get the syrup, that two pairs nested near the window last spring.

Gourd Bird Houses

Gourds, grown in one's own garden, make attractive bird houses, according to W. L. McAtee of the Biological Survey, who discusses them in Department of Agriculture Leaflet 36. Relatives of squashes and pumpkins, they may be raised wherever they can secure a day temperature of about 70° to 90° and a 150 day growing season. Martins particularly like them, but a variety of tenants will be clamoring for rents if different sized entrances are made. Large gauge copper wire is best adapted for wiring to trees. The gourds may be mounted on boards, if preferred, and taken down for cleaning.

Ouachita Park?

Rumor has it that renewed efforts to make Ouachita National Forest into a National Park are being made in the present session of Congress. This tract does not come up to National Park standards—the National Park Service has refused again and again to approve it. If there is one field from which politics should be excluded, it is that of our park systems; yet politics alone can add Ouachita. Let the log-rollers find other outlets for their endeavor.

Killing Predatory Animals

The Territorial Legislature of Alaska has appropriated $30,000 as an emergency measure for the suppression of predatory animals, particularly coyotes and wolves. Four hunters and trappers will be employed under two expert leaders to carry on control operations. The coyotes are the worst offenders, the few who drifted in from Yukon Territory having multiplied rapidly. Wolves are also steadily increasing.

Illinois State Bird

As a result of a movement started by Mrs. Emma P. Ragon, of the Macomb Business and Professional Women's Club, and sponsored by the state superintendent of schools, Francis G. Blair, and county superintendents, Illinoians have elected the cardinal the official state bird. The winner had a nine thousand plurality over the blue bird, in second place, in the state-wide poll, and in June of this year the legislature followed the people's choice. Hail to *Cardinalis cardinalis!*

for Your Prize Garden

Choose only the best. A small additional investment repays you a hundred fold with beautiful blooms year after year. You can be sure of the quality bred into

Northbrook Peonies and Irises

Choose what you want from the Master List, "America's Blue Book of Fine Peonies and Irises."

Quality Group "D"

Three Baby Pinks for long blooming season.

Eugenie Verdier, early	$1.00
Reine Hortense, midseason	1.50
Grandiflora, late	1.50
GROUP PRICE	$4.00
(3 plants) $3.00	

NORTHBROOK GARDENS
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Write your name on the margin. Tear it off with this corner of the ad and mail it to us. We will send you your copy of the Master List. Box JM

Lovely Native Bulbs from Western America

Enthusiastic reports regarding the good behavior and beauty of my Camassias come to me from every section of the East. A picture cannot do justice to the beauty of the bloom, but one who sees the long spike of blue or white flowers, above the large grassy leaves, will want them.

12 *Camassia Leichlinii* in blues
12 *Camassia* in creams
25 *Camassia esculenta* in deep blues

49 bulbs sent postpaid **for $2**
Shipment made for fall planting

Then there are **Trout Lilies,** or Fawn Lilies, or Dog Tooth Violets, whichever you please, but under any name they are lovely. Exquisite is the only adjective that fully describes their beauty. These do admirably in almost every place from Montreal to Washington, D. C. and west.

A collection of 100 *bulbs* in five fine varieties (first size bulbs) *should tempt you at* $3 postpaid, to be ordered now.

I also have Lilies and Trilliums in variety, with many other natives, all of which are described in my bulb catalogue.

If only garden flowers tempt you, my catalogue of Perennial Plants from all Over the World, is a book that you want. No other American catalogue has so much of novelty as this.

Either or both catalogues will be sent free on request.

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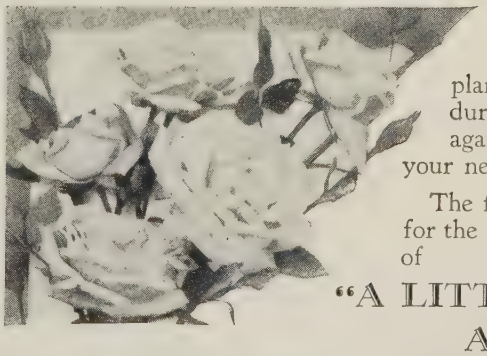
PETERSON ROSES



As pioneers in an almost nation-wide movement to plant more and more Roses during October-November, we again urge you to prepare for your next summer's Rose Garden.

The first thing to do is to write for the fall 1929-Spring 1930 issue of

"A LITTLE BOOK ABOUT ROSES"

Long considered a classic among Rose Catalogs. It represents a business that, even a quarter of a century ago, fostered the idea of planting more and more Roses outdoors in America. You will find this year's issue more beautiful and more helpful than any ever published before.

Among other things, it gives reasons why Peterson Roses, so hardened and well-ripened by two or more years in our fields, succeed over winter even in some rather severe climates. If you have any doubt, it tells how we guarantee your success.

This little book is gladly sent upon request.

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10 Karl Rosefield—Best red..... $5.00
10 Couronne d'Or—White..... 2.50
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All 30 roots for $8.00..... $10.00
10 Peonies all colors, my selection..... $2.50
Send for list of over 100 varieties

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Roses of New Castle

is the title of our autumn catalog, offering these world-famous roses, also hardy perennials, shrubs, tulips, hyacinths, etc. Everything for fall planting. Full cultural instructions given. Write today. The book is *free.*

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SPANISH AND HOLLAND IRIS

Beautiful shades of blue, lavender, white, yellow and bronze. Tall flowers of good substance, yet so delicate in form that they resemble an orchid. Keep well when cut for the house. Require little protection during Eastern Winters. Choicest, flowering size bulbs—50 for $2.25 postpaid. **South African Bulbs,** allied to Gladiolus family. **BABIANA, Freesia** grandiflora alba, **Ixia** Viridiflora. **Lapeyrousia, Sparaxis** tricolor. **Tritonia** crocosmia. Six each kind—36 strong bulbs for $2.25 postpaid. Catalog of S. African bulbs, Native California Wild Flower bulbs sent FREE on request.

GORDON AINSLEY, CAMPBELL, CALIF.

Hard Boiled

Nothing can discourage an English sparrow. He is impervious to all hardship. "Just to show how tough they are," writes Maben Jones of Columbia, South Carolina, "a family of sparrows built a nest in the insulators of an electric light pole at the post-office here, where there was, within six inches of the nest, a traffic bell that rang every twenty seconds, and one foot above the nest a fire siren that shrieked whenever the fire apparatus went that way. In spite of the hot summer sun that poured down on this iron pole, the traffic signal and the fire alarm, Mr. and Mrs. Sparrow were well pleased with their home, and raised several large and noisy broods." As near as can be estimated, these sparrows are almost as tough as human apartment house dwellers have to be when situated just across the air-shaft from a radio.

Game Increases

With every large animal on the various National Forests through the country increasing in number except the mountain-goat, the efficacy of the policy of protection carried out by the Forest Service is clearly proved. Antelope show an increase of 11 per cent, during 1928, according to the recent big game census of the Service. Bear, black and brown, gained but 2 per cent, and grizzlies a fraction more. Deer have expanded to about the limit of the feeding possibilities; the elk figures are 5½ per cent higher than in 1927. In several states, the moose herd has grown about one tenth larger, although elsewhere there were slight declines. Mountain sheep, back in the mountains where protection is difficult, have managed to more than hold their own. Even the decrease in goats is slight.

A Rabbit Attacks

A mother rabbit recently defied six men to protect one of her young in Yellowstone National Park, according to Fred T. Johnston, one of the park rangers. The young was lying in a wagon rut when the men came along, and they gathered around him, to help him out so the teams could pass. Like a flash, the mother darted from a clump about a hundred yards distant, and leaped into the center of the human circle, her eyes bulging with rage. When nothing was done to her young, she hopped a few steps away. This was a signal, and Sonny followed her. Together the intrepid two marched away, while the six men, completely awed, gasped.

Roadsides and Birds

Roadways affect the life of birds to a large extent, writes Jean M. Linsdale in July *Condor,* the magazine of Western Ornithology. Roadside ditches provide feeding stations, and contain many weeds, the seeds of which form a large item in the diet. Vegetation form excellent shelter; the poles and wires become look-out points from which to swoop on prey. Ditches become bathing beaches; sheltered clumps become nests. There are many dangers, of course, particularly from passing automobiles, but on the whole, Miss Linsdale concludes, the beneficial effects are much greater than the harmful ones.

Helps and Hints

FOR HOME AND GARDEN

October marks that very trying period when the dear dead remains of the past season are picked up, and the pre-natal demands of another year begin to get really strenuous. Like magazine editors and the wicked, there is no rest for the gardener, even during the most glorious of the year's months.

* * *

The principal activity is dividing and storing. Old clumps of herbaceous plants must be cut apart before the fifteenth. Dahlia tubers, gladioli corms, geraniums, tuberoses, rooted begonias, pateus, red hot poker plants, canna and salvia are to be dug up and put away. Sand serves best for begonias, and peat moss for salvias and pokers. If tubbed plants, as hydrangeas, or those that carry their leaves over the winter, as ivies and bay trees, are to be brought in, do not put in too dark or warm a location, as they require considerable light, and not too much heat.

* * *

Dahlias require particular attention. An unheated dirt cellar is best. Pack the tubers in boxes or barrels lined with newspaper and cover the top with more paper. If any mildew appears in the first few weeks, give the moisture a chance to escape by taking off the top paper. In a heated cellar, shallow boxes, about eight inches high, are best. Cover with shavings or sawdust. If you have one of those basements that almost are inhabitable, six inches of loam had better be put in around the tubers, to protect from the hot, dry air. Look at the bulbs about four times during the winter.

* * *

The art of "lifting" bulbs for storing is a delicate one, often not properly learned. Never lift until the foliage turns yellow, and if for any reason it is necessary to rush the period a bit, heel the bulbs in until the foliage has turned. The roots and withered foliage should be removed, too, before they are put away.

* * *

Bleeding heart, columbines, peonies and hollyhocks and such early-blooming hardy plants may be left out in the world to shift for themselves. If the field grown garden roses have not been dug until entirely dormant, they may be planted in a thoroughly well-drained bed, with excellent expectations of success. Perennials now take their place amid the Darwin tulip bulbs, if that is the garden plan.

* * *

The rather unfair practice of forcing bulbs starts now, with hyacinths, tulips and narcissi the early victims. These are planted in loamy soil out-of-doors, to grow the root formation which later will sustain them through the winter. Carnations and snapdragons must be potted for winter bloom.

* * *

Special attention should be paid to trees this month. The early coloring or dropping

Gorgeous Springtime Blooms

SHUMWAY'S "Pedigreed" Bulbs

If you want a beautiful springtime garden, plant bulbs this fall. Shumway's "Pedigreed" Bulbs are imported direct from Holland; guaranteed largest sizes, first quality. You can't fail to produce tulips of gorgeous beauty. Make your selections today at our low prices. Delivery charges prepaid anywhere in the United States.

Superfine Mixture—Largest Size Bulbs

100 Darwin Tulips	17 Varieties	.....	$ 3.50
100 Breeder Tulips	15	"	4.00
100 Cottage Tulips	12	"	3.75
100 Early Single Tulips	12	"	3.85
100 Early Double Tulips	12	"	3.85
100 Parrot Tulips	5	"	3.75
100 Crocus (1½" dia.)	5	"	3.00
100 Hyacinths	10	"	13.75
100 Crocus (1¾"—2" dia.)	5	"	3.75
100 Narcissi, U.S. Grown	5	"	8.75

50 Bulbs at the 100 rate.

Extra Special—12 Louis XIV Breeder Tulips, Purple, Gold Margin, 90c; fifty for $3.50; 100 for $6.25

All varieties grow 2 to 3 feet tall. Giant bloom.

100 Princess Elizabeth	Rose Pink	$ 4.75
100 Baronne Tonnaye	Vivid Pink	4.25
100 Bartigon	Carmine Crimson	4.25
100 Clara Butt	Salmon Pink	4.25
100 La Tulipe Noire	Nearly Black	5.00
100 Valentine	Violet	5.00
100 Scarlet Beauty	Scarlet	5.00
100 Inglescombe Yellow	Yellow	4.25
100 Golden Bronze	Name describes it	4.75
100 Farncombe Sanders	Rose Scarlet	4.50
100 Rev. Ewbank	Lilac-blue base	4.50
100 Cardinal Manning	Rosy Violet	4.75
100 Dream	Delicate Lilac	4.75
100 Pride of Haarlem	Carmine Rose	4.25
100 Mme. Krelage	Lilac Rose	4.25
1500 bulbs—100 of each	.....	62.50
750 bulbs— 50 of each	.....	32.00
375 bulbs— 25 of each	.....	16.50

Free Catalog—Our new catalog, in full colors, pictures a great variety of Tulips, Narcissi, Hyacinths, Crocus, Peonies, Lilies, etc. A helpful guide to gardening free. WRITE TODAY!

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GLORIOUS MAY FLOWERING TULIPS for Fall Planting from Bassi Frères

EXTRA QUALITY FLOWER BULBS

SPECIAL OFFER

DARWIN TULIPS

for immediate delivery. Grand assortment of named sorts.

100 for $3.25 1000 for $30.00

All top size bulbs sure to bloom and produce magnificent flowers.

DARWIN TULIPS

		Doz.	100
Caron de la Tonnaye	Pink	.60	$4.25
Clara Butt	Pink	.60	4.25
Farncombe Sanders	Red	.60	4.25
King Harold	Deep Red	.70	5.50
Pride of Haarlem	Rose	.60	4.75
Rev. Ewbank	Lilac	.60	4.50
The Sultan	Black	.55	4.00
Centenaire	Rich Violet Rose	.60	4.75
Dream	Heliotrope	.70	5.00
Flamingo	Shell Pink	.80	6.00
Loveliness	Rosy Carmine	.65	5.00
Mrs. Krelage	Rose Pink	.65	4.50
Mrs. Potter Palmer	Purple	.75	$5.50
Bartigon	Scarlet	.60	4.25
Princess Elizabeth	Pink	.60	4.75
Bouton D'Or (Cottage)	Rich Yellow	.65	4.75
Gesneriana Major (Cottage)	Crimson	.65	4.75
La Merveille (Cottage)	Flame	.70	5.00
Inglecombe (Cottage)	Yellow	.70	5.00
Orange King (Cottage)	Scarlet	.65	4.75
Orange Beauty (Cottage)	Orange	.65	4.75
Fairy (Breeder)	Reddish Mahogany	.70	5.50
Bronze Queen (Breeder)		.70	$5.50

An Attractive Saving.—10% may be deducted from total when ordering 6 varieties in dozen lots or more. 25 and 50 of each at the 100 rate.

Many other choice varieties listed in our 1929 Bulb and Plant Catalog mailed free. Ask for it.

SPRING HARBINGERS

Delightful little gems for edgings, Rock Gardens, etc. Chionodoxa (Glory of the Snow), Eranthis (Winter Aconite), Grape Hyacinths (Heavenly Blue), Snowdrops (Single, Scilla Campanulata (Blue)

Dozen 40c, 100 for $3.00.

Crocus Mixed: 100 for $3.00, 1000 for $27.00.

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BEAUTIFY your homes with a fine broad leaf flowering evergreen shrub plant of quality and beautiful **Rhododendron Max.** and **Mountain Laurel** 2 to 4 ft., 25 for $6, per 100 $20. **Clumps** 2 to 3 ft., 6 to 18 branches 25 for $15. **Seedlings** 6 to 18 in., 100 for $10. **Hemlock** 2 to 5 ft., 25 for $6, per 100 $20. Cash with order.

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Most Beautiful in Masses!

Nature propagates her wildings in generous fashion and to secure the prettiest effects we should follow her example. These Dog-tooth Violets *(Erythronium)* shown above are the result of a planting of fifty, three years ago. There are hundreds of them now. If you have a damp, shady spot, they will do as well for you. Bulbs ready for shipment now, in these varieties:

E. americanum, light yellow;
E. americanum albidum, the white companion;
E. grandiflorum, very bright yellow.
Uniform price:—**$1.00 for 10; $8.00 per 100, 100 of each of three kinds $22.50 delivered.**

For that Shrubbery Border:—

Native LILIES!

The sheltering shade of shrubs is ideal for the Lilies. Midsummer sees them rear their flower heads gracefully above the foliage. Lilies combine particularly well with such broadleaved evergreen shrubs as Rhododendrons, Laurels, etc. Available for immediate planting are:—

L. canadense, our wild yellow Meadow Lily;
L. philadelphicum, reddish orange, spotted purple;
L. superbum, our native orange Lily.
Uniform prices:—flowering size bulbs, **$4.00 for 25, $15.00 per 100.**

The Azalea De Luxe

We grow large quantities of the most important native Azaleas. But among them, one stands out like a flash of lightning—**Azalea calendulacea,** well named Flame Azalea. From Early May until after middle of June it is the most gorgeous sight among deciduous shrubs. Color: chiefly orange, yellow and flame red, scarcely two exactly alike.

			Each	10	
1	to 1½	feet	$2.50	$20.00	*All balled and securely burlapped for safe arrival anywhere.*
1½	to 2	feet	3.00	25.00	
2	to 2½	feet	3.60	33.00	

Forty pages of Nature Lore Free

To those interested in plant life, in woods or meadows, brooks or swamps, hills or dales, our catalog furnishes ample suggestions as to how to utilize Nature's Own garden materials to best advantage around the homegrounds. Gladly mailed free and please mention Nature.

GILLETT'S
FERN & FLOWER FARM
7 MAIN STREET
SOUTHWICK MASS.

of the foliage shows that something is wrong. Perhaps the soil is not right; perhaps some plant growth should be added to the ground near the base to replace the moisture-holding leaves that are raked up. Perhaps fungi or insect parasites are at work. Whatever the cause, remove it if discoverable, or call in a tree expert.

* * *

If ants have made your garden house a playroom, the best plot is to kill the queen. This regicide can be accomplished with carbon bisulphide—pour an ounce or two of the liquid in each of several holes in the nest made with a sharpened stick, and stop up the openings with dirt. Tartar emetic, placed where the creatures can get at it, is useful if the colony cannot be found. Dusting with sodium fluoride will also help.

* * *

If the Harvest Moon happens to shine down on any gardeners delayed at their labors, she doubtless will be much surprised to find them planting. Almost as many things go into the ground as come out, however. This is the main planting time for Dutch bulbs, lilies, perennial plants, shrubs, roses and hardy climbing plants. Grape hyacinth, squill, crocus and hyacinth take their winter places, if not planted late in September. Darwin tulips, narcissi and daffodils join the out-door ranks. And while thinking of it, order lilies for November and December setting.

* * *

The momentous time has come, too, to join in the nation-wide frolic of sowing annuals. Either seed-beds or final locations may be chosen for this rite. A few to be favored are California poppies, calliopsis, candytuft, centaurea, dianthus, Euphorbia, lace flower, larkspur, petunia, poppies, sweet peas and verbenas. Pansies, snapdragons and corn flowers are others on this very large list. The reward will come early in the spring, when the blooms appear.

* * *

The trench for sweet peas, as suggested, should have been dug last month, and was to be six to eight inches deep. Plant these beauties in the open but it is better to select a semi-protected place on the south side of a building, fence or hedge. To defend against the "cauld, cauld blast", leaves, hay or straw laid on liberally will be a help—it can be taken off when the weather moderates. Pansies thrive best in protected places also.

* * *

A suitable treatment for potted plants later to be brought in the house for flowering is to place them, pots and all, in a trench about a foot deep dug in the garden, and covering first with leaves and then with dirt. It will be eight or ten weeks before they are ready to go in the house.

Beautify your homes with a fine Broad-leaf Flowering Evergreen Shrub Plant of Quality and Beautiful. RHODODENDRON MAX. and MOUNTAIN LAUREL, 2 to 4 ft., 25 for $6; per 100, $20; CLUMPS, Fine Specimens, 2 to 3 ft., 6 to 18 Branches, 25 for $15; 100, $55; SEEDLINGS, 6 to 18 in., $10 per 100; HEMLOCK, 2 to 4 ft., 25 for $6; 100, $20. *Cash with Order.*

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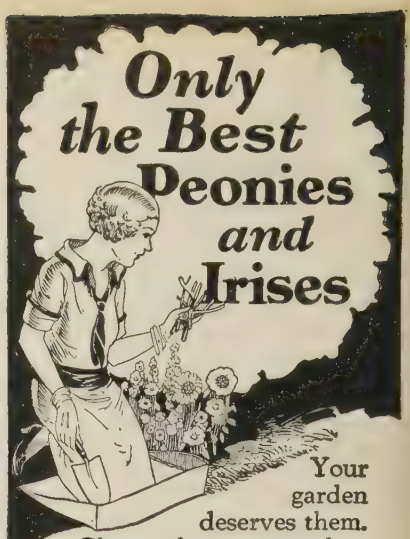
Blooming size **All different**
Postpaid for $2.50
Table garden size $2.00
JAMES ALLAN
Mountain Park **New Mexico**



Your garden deserves them. Choose them now—plant them in the fall. Search as far as you like. Nowhere can you find blooms that equal Northbrook quality.

THE ONE BEST BUY

9.3 Festiva Maxima, white	**$0.75**
9.2 M. Jules Elie, pink . . .	**1.25**
8.8 Karl Rosefield, red . .	**1.50**
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Order Quality Group "A" Price (3 plants) **$2.50**

Don't miss your copy of the Master List, "America's Blue Book of Fine Peonies and Irises." Comprehensive listings, unique and useful arrangements.

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Box, JM

Write your name on the margin, tear off this corner of the ad, mail it to us, and we will gladly send you the Master List. J. B.

Holland's Finest TULIPS
Growers' Stupendous

COMBINATION OFFER

AT A SAVING OF 50%
All Bulbs Guaranteed—First Size

100 DARWINS BREEDERS COTTAGE $3.25

Separately packed and labeled. Including the famous Louis XIV. "The cream of our Holland nurseries." Mailed FREE beautiful 10 page folder illustrating all our Dutch Bulbs in actual colors and bloom, with complete cultural directions.

A purchaser of Tulips may take advantage of our marvelous offer of—
Min. Dutch Hyacinths Doz. 75c—100-$5.00

100 first size Gladiolus for $2.50
Selected Dahlias 15c each

Glads & Dahlias for early spring delivery

Our New York office removed to our distributing station at Lake Como, N. J.

HOLLAND BULB COMPANY
Dept. N **Lake Como, N. J.**

MORE PERFECT PEONIES—BY GUMM

Try one of my introductory collections. 8 fine named Peonies for $2.50 or 16 for $5.00. Fresh Peony seed 50c and $1.00 per 100. Send for Catalogue.

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Remington **Dept. N** **Indiana**

BEAUTIFUL Colchicums

No other flower so interesting, and nothing more beautiful. Rosy tinted blossoms 1½ to 2 inches in diameter, that will bloom without soil, water or care. Through nature's own process, Colchicum bulbs store within themselves all the fertility, water, etc., they require to bloom. Simply place the bulb in a dish, bowl, basket, or on the table or window sill and watch its beauty unfold. The blooms will keep in good condition about two weeks, and when they fade and wilt, cut them off and others will follow in quick succession.

No Soil—No Water—No Care

Each bulb produces from 6 to 15 flowers. When the blooms have ceased, the bulbs may be potted or planted in the garden or lawn, where the following spring they will develop a beautiful foliage. You can remove the bulbs from the ground again about July first, dry them in darkness for a few weeks, and use for indoor decoration as at first. Outside of destroying them, it is impossible to keep them from blossoming at their regular blooming time. Order today. Choice bulbs, ***30c each; 4 for $1.00; 10 for $2.00,*** postpaid.

BURGESS SEED & PLANT CO.
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100 EVERGREEN TREES $3.50

Buy direct from the grower at wholesale

Sturdy, transplanted, well-rooted trees, four years old. You could not grow trees like these yourself at so little cost. Vigorous trees from a severely rigorous climate, that will thrive anywhere. Average height 4-8 inches.

Norway Spruce, – – – **per 100, $3.50**
A handsome tree of rapid growth.

Scotch Pine, – – – – **per 100, $3.00**
Rapid grower. Bluish green foliage. Especially good in dry sandy soil.

Norway Pine, – – – – **per 100, $3.50**
Very ornamental. Long, green lustrous foliage.

White Spruce, – – – **per 100, $3.50**
Light bluish-green. Dense foliage.

25 each of above four kinds, – – **$3.50**

Norway Spruce
5 yr. transplants 10-15 inches, **per 100 $7.00**

Scotch Pine
4 yr. transplants 10-15 inches, **per 100 $7.00**

No orders for less than 100. Remit with order. Trees shipped any desired time between September 1st and January 1st by Express. Average weight 14 lbs. per 100.

WESTERN MAINE FOREST NURSERY
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Rhododendrons Kalmias Azaleas

Collected and Nursery Grown
Leading in quality and service for twenty-six years
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LaBars' Rhododendron Nursery
1104 Bryant Street Stroudsburg, Pa.
Nursery located 2,000 feet from Lackawanna Trail, Pa. Route 2; U. S. Route 611. Visitors welcome at any time.

From Papuan Wilds

Dr. Lee S. Crandall, leader of the New York Zoological Society expedition, has just returned with nine species of paradise birds, including seven specimens of the rare Prince Rudolph's Blue, from Papua, on the island of New Guinea. Another rare bird taken was the long-tailed paradise bird, the first ever brought alive to this country from New Guinea. Many adventures, including a shipwreck, were experienced by Dr. Crandall and his men, but the birds were unharmed.

The Children's Fair

Garden and plant displays and forest and wild flower conservation exhibits will play a large part in the second American Institute Children's Fair to be held at the American Museum of Natural History from October 11 to 17 of this year. Prizes amounting to over $3000 will be given for such Nature subjects as gardening, Nature study, science equipment or books. As any resident of New York City's boroughs who is eighteen years old or under may compete at the fair, a large number of entries are expected. The School Nature League and the American Museum of Natural History are cooperating with the American Institute in this endeavor.

Christmas Trees

While Christmas trees should be a dead subject at this time, unless in localities where they have been saved to be burned as fireworks on July 4, the forward-looking people may well be looking to other Christmases, and be planting early young firs, spruce, or plants whose evergreen beauty makes them suitable for Yuletide decoration. The Brooklyn Botanic Garden has issued for the benefit of the progressives a leaflet, "Practical Suggestions for the Growing of Christmas Greens", which contains directions for the planting, caring for, and harvesting of stock, information on best available species, and material on ornamental evergreens. Copies of this leaflet may be obtained from 1000 Washington Avenue, Brooklyn Botanic Garden, New York City.

Braving Man

Two stalwart, faithful mothers whose deeds demand citation are living in Yosemite National Park, Ralph Teall, ranger, reports. One is a robin who picked for her nest a bush designed to be cut to make way for a garage. While hammers banged and saws buzzed around her, she "sat tight" on the eggs; when they hatched, she still remained, feeding them when the din became less. The other is a jay at Camp Curry who built near the dining room, and became a too-close neighbor when a pergola was built out. She even allowed visitors to stroke her as she sat on her eggs. It is to be hoped that both birds are still alive, to receive the plaudits of their kind for their daring.

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Send today for our beautiful new illustrated Iris Booklet describing over 300 new and finer varieties, anyone can grow. Many are shown in full color.

Southern California Iris Gardens
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Falling Leaves is Nature's Warning that it's time to tuck your garden away for winter

ALL during the Spring, Summer, and Fall you have taken the bounteous offers Nature has provided in your garden—flowers, fruits, vegetables, beauty! Do you appreciate the colossal effort, the work, your plants have done—and now the need for rest! and *protection!* This is the one time during all the year when you must do your part if you want that bounteous beauty again next year. All evergreens, shrubs, perennials, and lawns *need* a winter's mulch to protect them from the killing winter winds. They need its warmth, its soil building and humus content. Given this they will be protected from winter killing and will come back to you next spring, more able and more willing to continue with the wonderful work. Let us tell you more about this winter mulch in our free descriptive literature. Or better still order a supply of G P M today. G P M is the best medium to use for this purpose. $4 per single bale f.o.b. New York. Prices for larger quantities on request.

ATKINS & DURBROW, INC.
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New York, N. Y.

Plant This Month
All Hardy Rock Plants And Wild Bulbs

October is one of the best months to plant wild bulbs and hardy rock plants. We have all the old standbys and the rarer ones, such as suspect you have long wanted, but didn't know how, or where to get them.

HERE, then, is the solution to your problem of how to get the wild bulbs and plants without robbing and desecrating their native habitats.

Planted now, and covered lightly during the coldest part of Winter, and you'll be way ahead of those who wait 'til Spring. It's the month of months to plant tulips. You can't put that off until next Spring. Send for our catalog of Rock Plants, Tulips and wild bulb species.

Wayside Gardens
MENTOR, OHIO

Reg.U.S.Pat.Off. E. H. Schultz, *Pres.* J. J. Grullemans, *Sec'y-Treas.*

DELPHINIUMS

with their tall (6-8 ft.) stately spikes of blue flowers, are the finest blue perennial in existence. Fine for background, in groups or as single specimens. I grow the famous Wrexham and Vanderbilt strains which come in various shades of blue, many having beautiful pink and lavender shadings. Also Toole's white, which is as good as the others, and pure white. There is nothing better to be had than these strains.

Fine 1 yr. plants, $4. per doz. Selected plants, $6. per doz. All Prepaid. Send for Circular

CHAMPLAIN VIEW GARDENS Box D-3 Burlington, Vt.

6 PEONIES $2.00

Just one of the many big bargains offered by Pfeiffer to introduce the special quality of flowers grown at Winona. This is a wonderful selection of six peonies—2 white, 2 red, and 2 pink. Each correctly labeled.

FREE Richardson's Rubra Superba. A gorgeous $1 Peony free if you order early.

Extra large divisions. $2.00 postpaid. Also 25 Iris assorted colors, postpaid $1.35. Also many choice collections of Tulips, Gladiolus, etc.. at prices you can't duplicate anywhere.

Order direct or write for catalog giving new low prices on rare varieties of Peonies, Iris, Phlox, Gladiolus and other perennials. Sent free.

THE PFEIFFER NURSERY
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SPECIAL OFFER for FALL PLANTING

Japanese Roseflowering Cherries in complete assortment:

5 2-yr. trees, prepaid to your address, $7.50

10 2-yr. trees, prepaid to your address, $12.50

(*East of Rocky Mountains*)

Illustrated catalog FREE

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The GARDEN NURSERIES Narberth Pa.

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OF NARBERTH, PENNA.
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100 Fine Iris Free!

A deal has just been made that takes me where there is no garden. I must dispose of what I so wished to keep. I have 4 gardens containing hundreds of varieties of iris—and the world's best. Several growers have said I have the finest collection they ever saw. The poorest iris in my gardens is listed today at 50c. This collection was made for pleasure—not to sell, and is so grown that I cannot safely label. Only the best standards, mostly new and rare sorts, choice dwarfs, Siberian and some Japan.

To dispose of them quickly, I offer 12 roots worth more than $1.00 each for only $10.00 and with them give free 100 choice, fresh assorted roots, all delivered to the express office properly packed and addressed, no labels, cash with order. Only ad. Last chance. Hand-pollinated seeds, best crosses, $1.00 per ounce. Money back if over sold. Reference, any bank in Bloomington.

H. M. HUDELSON, BLOOMINGTON, IND.

FALL BARGAINS

Write for Cole's special Fall Book containing twenty pages in color describing *Peonies—Dutch Bulbs*—also *Phlox, German* and *Japanese Iris, Oriental Poppies,* field grown *Roses,* that are potted and ready to bloom, etc.

This free book contains *big values* on thrifty stock. We grow "Everything that's good and hardy".

THE COLE NURSERY CO.
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WILD FLOWERING PLANTS

Beautify city lot or large estate. For land and water, 60 natural food plants—berry-bearing shrubs that attract birds, fish and animals. Suggestions—prices free.

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What makes a good
PLANT LABEL GOOD?

It must be impervious to moisture, must retain its markings, and must not girdle the Plant—WE HAVE IT.

Sample Line for the Asking

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Plant now for next spring's garden. Free, illustrated Fall Catalog now ready containing complete lists and many attractive special offers.

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The Dahlia King

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EVERGREEN SHRUBS

Rhododendron and Mountain Laurel 2 to 4 ft. 25-$5., 100-$20. Hemlock 2 to 4 ft. 25-$5., 100-$20. Fancy Holly 2-4 ft. 25-$8.00. Write for illustrated price list.

JOHN E. NORRIS Box 29 Doeville, Tenn.

Subsidy for Birds

The Canadian government recently granted $5,000 to Jack Miner, one of the leading conservationists in Canada, to help maintain his bird sanctuary and to continue his studies of bird migration. Mr. Miner has tagged thousands of birds in his years of work, and his accumulation of data is most valuable. The recognition of his worth by Parliament assures that his efforts will not cease, as so many worth-while efforts in this country have ceased, from lack of funds.

Trapping Progress

The old dominion state, Virginia, has adopted a resolution forbidding the setting of steel traps in the county of Southampton for a three year period, and the chairman of the Game and Inland Fisheries promises that if the citizens will support him, he will try out other counties. California has passed a measure making the use of any trap with saw tooth or spiked jaws a misdemeanor. These states are showing the way—which will be the next?

Chicago's Aquarium

The largest aquarium in the country, named after its donor, John G. Shedd, is being built in Chicago, Ill., to furnish a home for one of the most varied collection of fish ever existing outside of the sea. The total capacity of the tanks is about 500,000 gallons. A "balanced aquarium" room, decorated in Japanese style; scientific lighting; violet ray glass in all the skylights, and special hatcheries are other features of this most modern of fish institutions.

Cypress Swamp Succumbs

The Big Salkehatchie swamp, one of the best scenic assets of South Carolina and the source, in years gone by, of millions of board feet of "pecky" cypress and tupelo to decorate millionaires' homes, is succumbing to cutting and the inroads of the thick undergrowth. Another year will see its passing, and the entire United States will be the loser. It will still be a rendezvous for naturalists, however, who come to study the abundant wild life still existing there. But the monarch of all Atlantic coast trees, a giant cypress whose first branch is 90 feet above the water line, will be saved, to wear a brass plate commemorating its fame.

Taming Bats

There are pets and pets, but a subdued bat, *Myotis californicus,* captured and quieted by Barbara Hastings of the Grand Canyon National Park staff, is the latest. Miss Hastings captured the creature one dusk, and despite its clawings and bites, carried it home. Its first wild frenzy to escape gave way to satisfaction in the brand of millers caught for it. It soon learned to drink water from its captor's finger tips, and every time Miss Hastings entered the room, it would crawl to her hand to be fed, then would go to the screen to hang upside down and enjoy the feast. Finally the millers gave out, and the pet was released,—with real regret, for it had become docile and trusting.

The Public Pays

"What I do with my own property is my own business". This statement has been made thousands of times, and the courts have supported it during long centuries, but now there is coming to be a slow change, with an understanding that every private act has a public repercussion. And it takes no Einstein to understand that the relation between the individual and the state in regard to forestry is fundamental. So the remarks of Major R. Y. Stuart, new chief of the Forest Service, to the effect that wasteful cutting and destruction of young trees by private loggers in the West will cause an ultimate loss to the public, do not seem radical. He points out that once the lands are left useless, they will revert to the state by tax defaults, and that the task of making them wage-earners again will be one that the public can hardly afford either to do or not to do. Major Stuart cites the Idaho forestry laws, which require adequate fire protection, but little else, as an example of what might be improved upon. The solution of the problem is the increasing of the national forests, or stringent forest laws for protection of young growth. Major Stuart also points out that more publicly owned forest lands are needed in the East for the protection of critical watersheds and the reclamation of idle and non-productive land, the matter being one for the States, and not the Federal government, to undertake. Private timberland owners are becoming more progressive and helpful, the Chief Forester believes, and their interest can be further aroused by security from excessive taxation, by efficient fire-fighting systems, public research, and consistent education. The eastern owner is far behind his western brother, however, and the greatest amount of missionary work must be done on him.

Do Hawks Eat Snakes?

The so-called Aroostook Road built in 1835 cuts a lane four rods wide through a northern Maine forest about nine miles long, writes R. W. Shaw of Houlton, Maine. Last October Mr. L. O. Ludwig, Treasurer of the Houlton Savings Bank, and Mr. Shaw were driving along the Aroostook Road when a hawk arose with a grass snake over two feet long in his claws and flew along ahead of the car. At first they thought it was a crane with its long legs, but, speeding up, came closer and found his hawkship had the snake by the middle evidently planning for a dinner.

Nature and Schools

Our interesting contemporary, *The Nature-Garden Guide*, published by School Garden Association of New York under the editorship of Van Evrie Kilpatrick for the Nature education of New York City Schools, makes a valuable suggestion—"Why not use our school grounds in teaching?" And why not? In cities where Nature is kept out, it can easily be smuggled into the environs of the class room. *The Nature-Garden Guide* makes valuable suggestions for landscaping, arranging plant and animal life, and building artificial or natural "Nature Trails". The plan seems very sound, and probably will not be restricted to the region of Greater New York.

Note size of Washing [25 Pieces] Done in 15 Minutes

NOTE What These Users Say!!

"Your EDENETTE Electric Washer is marvelous—a great time and labor saving piece of machinery. From a hygienic standpoint it is perfect. We have been using the EDENETTE ever since our baby came. He is spotlessly clad with little trouble. We use Ivory Flakes and our clothes are washed spotless white and soft. We like the fact that the use of the machine is so simple that the maid can use it, as no special skill is required. It certainly frees the mother from the usual drudgery with little expense."

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"Am enclosing my check for $49.50 for the EDENETTE Washer and I would like to broadcast it that it is the grandest little washer going. I am going to take it to Nantucket this summer as I find it will help us out a great deal as laundry work there is very expensive."

Mrs. L. S. W., Boston, Mass.

"The EDENETTE reached Willows in good shape and has become an indispensable piece of equipment in our household. It just fits my need for the small household wash and does the work well."

Mrs. R. H., Willows, Calif.

"I am immensely pleased with it—it washes all my small fine things beautifully and I also use it for rinsing them, so I hardly have my hands in the water at all. It is just exactly what I have been looking for, for some time."

Mrs. F. J., Newburgh, N. Y.

"I think it is just wonderful, does its work just perfect. I must say that I love to wash with it."

Mrs. L. M., Sandwich, Ill.

Distributors Wanted

Open territory for Exclusive Representatives. If you wish to build your own business, have $300.00 to invest in merchandise write for Distributors Prospectus.

Here is YOUR Washing Machine

AMAZINGLY compact, efficient, fully guaranteed. A most revolutionary washer. No drudgery washing the EDENETTE way. A perfect washing turned out in 15 minutes right on your kitchen table or wherever convenient, without fuss, bother or slopping suds. Think of it—you can own an EDENETTE for less than one-third the cost of the ordinary washer.

Simply drop into the EDENETTE tub an armful of clothing, such as you see in the photograph, pour in hot water and soap flakes, place on the top containing the motor driven vacuum cup, plug extension cord into any light socket. In 15 minutes clothes will be beautifully washed. Handles anything from dainty lingerie to a mattress cover.

Easily carried—weighs only 17 pounds. Constructed almost entirely of aluminum. Top when inverted fits into tub, *as illustrated in photograph.* Store it under table or on closet shelf

Send No Money!

You must actually see and use the EDENETTE to appreciate this amazing Washer. We do not ask for even a deposit. We will ship it to you for 5 Days' Free Trial, all transportation charges paid, knowing full well it will sell itself to you. If you are not as enthusiastic about the EDENETTE as thousands of other users, just return it at our expense. No questions asked. You are dealing with one of the oldest manufacturers of clothes washers in this country. This is the time and labor saving device you have needed. *Don't delay*—now is the time to examine it **FREE.** Easy terms offered. *Mail coupon now.*

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Send me the EDENETTE clothes washer for 5 days' FREE TRIAL. If I keep it I will pay $49.50 cash or $4.50 at the end of trial period and $5.00 per month for 10 months until paid. Title to remain in YOU until FULLY paid.

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Street .....

City ..... *State* .....

Dept. 310

"food fallacies"

SOME people believe cucumbers need some special preparation to draw out poison; others think that egg plant must be pared, sliced, and allowed to stand several hours under a heavy weight so the poison will ooze out before it is fried; and many people believe that food which remains in the tin after it is opened will surely be poisoned.

But food prejudices are being overcome to the extent that bananas, once thought indigestible, are now considered good food, when ripe, even for babies. Laura McLaughlin in "Food Fallacies" appearing in HYGEIA for October, credits scientists with the spread of some of our delusions regarding food, others she lays at the door of people who have had something to sell.

Wanted: A Formula for Health

Man's age-long groping for a health formula—a set of sure-fire rules that will guarantee him immunity from sickness—is pathetic. Read what H. E. Kleinschmidt, M.D., prescribes to promote not only individual but public health progress in his article, "A Formula for Health."

▲ ▲ ▲

Get Pencils For This One

A brand new kind of efficiency test—scoring the health department of the home. Do your children have at least 3 glasses of milk daily? Has the family towel been replaced by individual towels? etc. You won't want to miss this unusual feature.

▲ ▲ ▲

18 Extra Years of Life!

During the last fifty years, an average of 18 years has been added to the life of an individual. N. P. Colwell, M.D., tells how increased medical knowledge has resulted in superior methods of treatment in "Modern Care for the Sick or Injured."

▲ ▲ ▲

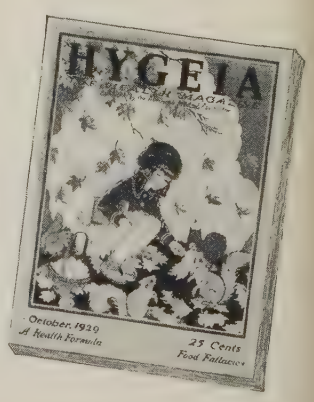
Knapsacking For Health

Walking is admittedly the best form of exercise. "Autumn is the ideal time for hiking tours" writes Claude P. Fordyce in "Knapsacking for Health" and offers suggestions on knapsack equipment and also excellent tips on trails worth traveling.

▲ ▲ ▲

In Addition

The October issue of HYGEIA is just teeming with good articles on health of interest to everyone. Besides those mentioned above; the October issue will include: "Deafness", "Restaurant Inspection", "How Undesirable Immigrants Are Discovered", "The Child's Nurse", "Founders of Our Knowledge of Tuberculosis", part one; "Simple Lessons in Human Anatomy—The Alimentary Canal", "A New Foster Mother", "Health Work in the Cleveland Schools", "The Little Old Wish Man", regular departments, etc.



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THE AMERICAN MEDICAL ASSOCIATION
535 N. Dearborn St., Chicago

Enclosed find $1.00 for which send me HYGEIA for 6 months beginning with the October issue.

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Nat-0

Why Not Try This?

Napoleon's method might be harsh, but here were no second offenders to destroy orests, if one may believe a newly-discovred letter of his written to the prefect of a epartment in which there had been a numer of forest fires: "Monsieur le Prefect: I m informed that a number of fires have roken out in the department. You will lease have the individuals convicted of aving set them shot immediately. Also if res break out again, I shall see to giving ou a successor."

The Carnegie Cruises

The non-magnetic ship *Carnegie*, bound n a three-year cruise under the helm of Capt. J. P. Ault for all the seven seas to nake ocean surveys, studies of bottom sedinent and of fish-food and to collect ocean-irculation data, has completed the first Jorth Atlantic lap of its voyage, and now s sailing in the Pacific. Word comes from ne expedition that much valuable informaion has already been collected by the deep-a thermometers, the bottles and the wires. Many biological specimens have been se-ured.

"Lindy" Not Alone

The story of "Lindy", the young parrot nised in captivity, brings us another par-ot report, this one from Mary E. Kitchen f Larned, Kansas. For twelve years up o 1922 two parrots from Mexico were ctive members of the Kitchen family. Not ong after they arrived and were given ne freedom of the yard and adjoining rees, the pair made a nest home at the ntrance to the cement storm cellar, rais-ng a young bird who at six months had ill the vocabulary of its parents. Seven irds, over a period of years, were raised o adult parrot-hood and are alive today.

On a Cold Morning

One chill morning last winter, when the rost particles were drifting down from the lent trees, Mrs. Howard Hunt of Liberty, ew York, saw English sparrows clinging ke chimney swifts to the stucco house next oor. She discovered on the elderberry bushes earby flies and bees frozen and immovable, nd concluded that the sparrows either were ry cold themselves, or else had clung to he house to capture the insects huddled on s sides. Once disturbed by humans, the parrows flew away, leaving their unusual erch.

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Four copies sent to any four addresses for One Dollar

They're Different—worth many times more than ordinary skates. Price, $4 pr. —no lower. At your dealers—or order direct from us enclosing price. Accept no substitutes.

BEAT THE REST

Speed Up, Go Faster and Easier, Stop Quicker With "4-Wheel Brakes." These Skates Grip the Pavement — They are SAFE and SURE.

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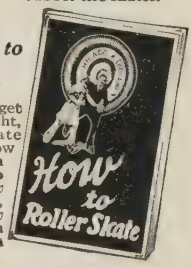

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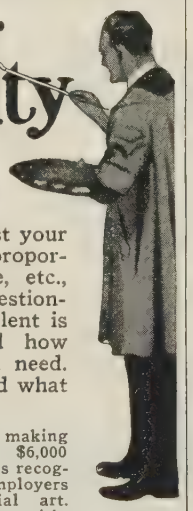

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A Crisis in Conservation

This is the title of a pamphlet recently issued over the signatures of W. DeWitt Miller, W. G. Van Name, and Davis Quinn. Briefly, it details the dangers that menace many of our birds, particularly the game and the larger non-game species, and some of the factors that are contributing to their continued reduction. So far it contains little that is new. But it also stresses, in no uncertain terms, some of the factors that contribute to these causes, the tacit or active encouragement enjoyed by many agencies of destruction, as results of the apathy of many of the real friends of wild life, and the complacent attitude assumed by some powerful organizations whose avowed purpose is wild life protection.

The text appears to be mainly the work of the senior author, well known as one of our foremost students of the anatomy, classification and life habits of birds, and one who was also intensely interested in their perpetuation. As such it will command respect and attention.

As this note is written, we learn with sorrow of the death of Mr. Miller from an accident suffered on a week-end field trip. This robs the science of ornithology of one of its most earnest and able devotees, and the cause of conservation of a sincere and well-balanced advocate.

It is announced that copies of *A Crisis in Conservation* may be obtained, while they last, from Davis Quinn, 3548 Tryon Avenue, Bronx, New York City.

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Insect Superstitions

Perhaps, after all, the present generation is not as ignorant, Nature-speaking, as the last. At least, consolation can be taken from the list of insect superstitions compiled by Charles E. Brown, director of the Wisconsin Historical Museum, for University of Wisconsin summer school students.

"German housewives called a moth 'a 'butter hex,'" writes Mr. Brown. "Because of their night flying habits they were thought to be in close association with witches. They 'bewitched' the butter by flying or crawling into churns, milk pans and butter jars.

"A woolly-bear caterpillar crawling hurriedly across a walk in the fall told of the near approach of winter, and the size of the colored areas on his back indicated the severity of the winter.

"June bugs were disliked or feared, especially by girls, because of the delight which they were supposed to take in becoming entangled in one's hair. If a firefly came into the house it was said that 'some one will go and some one will come.'

"Impaling a live cockroach on a pin would cause the rest of the cockroaches in the house to leave," Mr. Brown recalls. "Sow bugs were believed to have various medicinal values. A number were placed in a bag worn around the neck to cure flushes. Water in which they had been boiled was supposed to be a cure for jaundice.

"If a hornet built its nest low it was a prophecy that the weather would be cold and stormy, if high, dry and mild. If one injured a yellow jacket's nest, its inmates would follow one until they obtained their revenge. If a fly was killed, 'ten flies would come to its funeral.' The W on the wing of the locust meant war, woe and want.

"Dragon-flies, or 'Devil's Darning-needles,' were feared by children, who placed their hands over their ears when one flew by," Mr. Brown says. "It was believed that they sewed up children's ears when opportunity offered. They were believed to be evil spirits sent by Satan to work mischief. Boys called them 'snake-feeders,' or 'snake-doctors,' because of a belief that they acted as feeders and doctors to snakes. They were also supposed to warn snakes of danger.

"If you killed a daddy-long-legs 'the cows would go dry,' or you would 'lose all of your cows.' If you killed one there would be a poor harvest. Hold one by two of his legs so he cannot get away, and he will point to 'where the cows are.'"

Saving Chestnuts

The U. S. Department of Agriculture has recently complimented Dr. Stuart Thomson, author and conservationist, on the publicity he gave to the need for bringing back the chestnut tree, *Castanea americana*, which has been largely destroyed by blight. Through his efforts, the Department states, information on resistant chestnut sprouts and on Asiatic species has been collected, and the way opened for study to bring these beautiful, stately trees back to their place.

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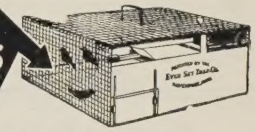

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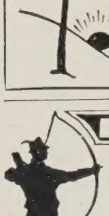

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The American Tree Association stands for a constructive policy of forest protection and extension, to increase appreciation of forests as natural resources essential to the sound economic future of the country.

The Association directs encouragement of tree planting by the public; disseminates popular forestry news for the information of editors of the daily press; and compiles and distributes forestry news and reports on legislative progress for assistance of active foresters in the field.

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FOREST TRACT CHOSEN BY D. A. R.

Tree planting news from the field shows many organizations busy

THE tree planter is afield again. In truth he is always afield because when not planting he is planning which comes to the same thing. The American Tree Association has free tree planting suggestions and application blanks for those who want to join the tree planting army.

A fine thing has been done by the Daughters of the American Revolution of Massachusetts. The state forest committee of the D.A.R. has decided to purchase the "More Hill" tract of 1000 acres at Goshen in Hampden County as the site of the first memorial D.A.R. forest in this country. The tract fronts on the road from Goshen to Ashfield, a third of a mile from the Berkshire Trail. "More Hill" is 1800 feet high and has a command of the Connecticut Valley. It is an ideal location for a demonstration forest. The forest will be presented to the Commonwealth of Massachusetts. The chairman is Mrs. James Wheeler of Worcester street, Natick. To mark this step, a large boulder will be placed along the roadside, suitably inscribed as a marker for this, the D.A.R. memorial forest in Massachusetts.

Not only will this tract of land be a memorial to the Massachusetts Daughters of the American Revolution, but it will be a tribute to the term of office of Mrs. James Charles Peabody of Boston, for this drive was launched and carried on during her last year as the head of the D.A.R. What the D.A.R. has done and is doing in the conserving of the forests and trees in this country might well be imitated by other civic organizations. On the committee with Mrs. Wheeler are Mrs. Clarence M. Casselberry of Newton, Mrs. George F. Fuller of Worcester, Mrs. Samuel R. Whiting of Holyoke and Mrs. Arthur Williams of Brookline.

More members of the tree planting army are found in Ohio. Children of Franklin Township School near Kent took part in a reforestation project under the auspices of the Kent Chapter of D.A.R. Two acres at the rear of the school were planted with 2500 trees. They were secured from the Wooster Experiment Station and set out according to directions received from the State Forester, Edmund Secrest. J. G. Osborne, of the Akron Water Works directed the work. Each child at the school planted at least one tree, under the supervision of an older person. The teachers and members of the D.A.R. also planted trees. Through the efforts of Helena Cady Osborne each planter has registered with the American Tree Association in this first school reforestation project.

At about the time Charles G. Dawes, ambassador to Great Britain, and J. Ramsay McDonald were planting a tree to mark their meeting in Scotland, a woodland hall of fame was announced at Newark, Ohio. This woodland Hall of Fame, in which memorials to famous Americans will be trees planted by the celebrities themselves, has been established in a new arboretum here. A deed just filed by Beman G. Dawes, brother of the former vice-president, puts a 293-acre forest near Newark into the keeping of a self-perpetuating board of trustees who are entrusted to develop it for educational purposes. Several men have journeyed to Dawes Wood to plant their trees. Among them is Joy Morton, founder of the Morton Arboretum at Lisle, Ill., who had a tree brought from the Nebraska home of his father, J. Sterling Morton, founder of Arbor Day, as a memorial to him.

One of the unique ways of joining the tree planting army is that taken by the Masonic Country Club of Western Michigan at Grand Rapids. The club grounds were to be beautified. The interest of the members had to be aroused. The forestry committee of the club issued a call to join the American Tree Association. This committee is Julius Tisch, Eugene Goebel, William K. Clute. As a result of its work Kirk E. Wicks, the president of the Club, announces that hundreds of trees were planted by individuals and various groups in the Masonic order. And the good thing about it all is that the work is to be continued. Tree planting does that very thing; once you get into it you keep at it.

The Boy Scouts have big plans afoot all the time. The record of 1,000,000 trees planted last year in reforestation projects throughout the United States is to be surpassed this year, according to reports. The largest single tree planting project was started on April 6 at Grays Harbor, Wash., when 100 Scouts began the planting of 100,000 fir trees on a tract near the Olympic National Forest. The work was supervised by H. L. Plumb, State forest supervisor. The Chamber of Commerce of Grays Harbor helped the Scouts by furnishing transportation for the trees and planting implements.

As an aid in the reforestation of Pennsylvania, Scouts of Scranton have purchased a 441-acre tract in Wayne County which they intend to use as a forest preserve. Many new trees are to be set out in the next few years and the tract will be cleared of dead timber.

Supervised by E. J. Moore, assistant New Jersey State Forester, Scouts of South Bergen Council, which includes the municipalities of Lyndhurst, Rutherford, North Arlington, East Rutherford and Carlstadt have planted 3000 evergreen trees at their Oakland camp. Plans for the reforestation of the entire camp site call for the planting of 3000 trees annually for ten years.

But the Girl Scouts are busy too and do not intend to let the boys get ahead of them. Sixty Girl Scouts of Albany County, N. Y., planted 1300 trees on their camp ground at Camp Cogswell in Rensselaer County, under the direction of forester George F. Stevens of the Conservation Department. The scouts were in charge of Mrs. Charles J. Herrick, Commissioner of the Albany County Girl Scout Council, assisted by Miss Naomi F. Kopanske, Local Director. More than 800 pine and 500 Norway spruce were planted.

Tulips & Springtime!

To enjoy them together in your own garden next season

Plant Schling's Bulbs *This Fall*

DARWINS and Cottage, single and double, early and late—their lovely cups brimming with color and nodding a merry "good morning" to you every day for weeks—from early April to June in fact—How can you afford to miss them!

You can't have too many of them! Order now and generously, plant them this fall and we promise you a winter of pleasant anticipation, a springtime full of delightful surprises and years of recurring pleasure.

To bring the joys of Tulip time to as many as possible we make the following very special offers, all bulbs guaranteed top size and very first quality.

Eight Splendid "*Get-Acquainted*" Offers

Each a wonderful value—*at present prices*

100 Single Early Tulips in 10 named varieties	$7.00
100 Double Early Tulips in 10 named varieties	8.00
100 Darwin Tulips in 10 named varieties	6.00
100 Cottage Tulips in 10 named varieties	6.00
100 Breeder or Art Tulips in 5 rare named varieties. Wonderful shades of Bronze, Buff, Orange, and Apricot	8.00
100 Parrot or Orchid Tulips in 4 named varieties	7.00
100 Bedding Hyacinths in 4 colors	15.00
100 Crocus in 5 varieties, 1st size bulbs	5.00

5% Discount—if cash accompanies order

OUR FAMOUS BORDER COLLECTION

of magnificent Darwin and Cottage Tulips (as pictured above, in order from right to left)

	Per 100	*Per 1000*
Clara Butt—Exquisite Salmon pink Darwin	$5.50	$50.00
Picotee—White Cottage with lovely reflexed petals edged with pink	5.50	50.00
Dream—Charming, clear lavender Darwin	6.00	55.00
Bronze Queen—Art tulip of buff tinged with golden bronze	6.00	55.00
Pride of Haarlem—Darwin, American Beauty color	6.00	55.00
Zulu—Enormous size Darwin of deep velvety purple	6.50	60.00
Golden Beauty—Glorious golden yellow Cottage	6.00	55.00

25 bulbs at the 100 rate; 250 bulbs at the 1000 rate

Very Special	100 Bulbs each of 7 varieties above (700 in all) or less than 5½c each	$38.00
	1000 Bulbs each of 7 varieties (7000 in all) or 5c each	350.00

EXTRAORDINARY OFFER

100 *DARWIN TULIPS* *for only* **$4.00**

Choicest, first size bulbs, sure to bloom. Schling's Special Mixture made up especially for us from ten of the finest named varieties—not at all the ordinary field-grown mixture usually sold.

A $6.00 VALUE FOR ONLY $4.00, OR, IF YOU PREFER, 50 BULBS FOR $2.25

THE HERALDS OF SPRING

200 of these Lovely Spring Beauties—25 each of the following 8 named varieties for only..... **$7.00**

Snowdrops—Glory of the Snow (blue)—Heavenly Blue Grape Hyacinths—Blue Squills (*scilla siberica*)—Blue Bells (*scilla campanulata*)—White Blue Bells—Wood Hyacinths (*scilla nutans*)—Winter Aconites.

100 Bulbs $8.50

Virginia Grown **DAFFODILS and NARCISSI** for Naturalizing and Lawn Planting

Our *Old Dominion Collection* in choicest mixture of airy and medium Trumpets, short cupped and lovely Poet's varieties. All first quality bulbs grown in Virginia where their culture has flourished since Colonial days. These bulbs, being native, are fully acclimatized and none better can be grown anywhere. The supply will not equal the demand. *Order at once!*

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